NEWSLETTER

ICAR-CENTRAL ISLAND AGRICULTURAL RESEARCH INSTITUTE

Port Blair, Andaman and Nicobar Islands

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हर कदम, हर डगर
किसानों का हमसफर
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Agrisearch with a human touch

IN THIS ISSUE

RESEARCH SPOTLIGHT

From the Director's Desk ....

Ornamental fish keeping is the second most educative hobby in the world after photography, with approximately 100 million hobbyists around the globe. Attractive colourful fishes are kept as pets in confined spaces of an aquarium or a garden pool to enjoy their beauty for fun and fancy. In addition to the aesthetic beauty of the home and mind relaxation, ornamental fishes serve self-employment to the youth by taking to various job activities such as the culture of native varieties of ornamental fishes and their export. Along with the aquarium keeping, India exports many ornamental fishes. More than 500 commercially important freshwater ornamental fish species are bred in India, but the export trade is mainly dominated by indigenous freshwater species collected from wild and some captive-bred exotics. Indigenous fishes like Loaches, Eels, Barbs, Catfishes, Gobies, Shrimps, Gouramies, Killi fish, glass fish and shrimps are the ruling species in the aquarium industry. In addition to the freshwater species, brackish water candidate fishes like Scats, Monoangels, Mudskippers, Archer fishes, and Puffer fishes are exported from India. Standardization of captive breeding technology is the keystone factor and India accomplished with captive breeding technology of more than 35 indigenous fishes. The Pradhan Mantri Matsya Sampada Yojana (PMMSY), a flagship initiative launched by the Government of India promotes ornamental fisheries development in the country by providing financial assistance for establishing small backyard, medium-scale, integrated ornamental breeding and rearing units, and ornamental fish brood banks which has resulted in the boost of ornamental fish export form 54 metric tonnes (2020-2021) to 222 metric tonnes (2021-2022). Andaman and Nicobar Islands situated in the Bay of Bengal, is known for its diverse marine ecosystems and coastal faunal diversity. The Island also has several small streams and inland water bodies wherein various endemic and native fish species are inhabited. ICAR-CIARI took the initiative and promoted freshwater ornamental fish farming practices in the Islands and developed an ornamental fish hatchery in the Andaman Islands in 2021. Presently, the unit at ICAR-CIARI produces, 8 strains of high-quality Betta fish (*Betta splendens*), 4 strains of Guppy fish (*Poecilia reticulata*), Angel fish (*Pterophyllum scalare*), Mollies, Gourami. The unit also produces live aquatic plants and live feed starter cultures like *Moina micrura*, Micro worms & Vinegar eels for broodstock and larval rearing. During 2024, the unit has further extended its facilities to initiate the culture and production of Goldfish, Koi carps & Tetras, barbs and other native fish species.

Dr. Eaknath B. Chakurkar

Research Highlights

DNA Barcoding revealed *Piper pendulispicum* C.DC. as a new species for India

Ajit Arun Waman, A.K. De and Pooja Bohra

The botanical identity of Woody pepper, an underutilized spice of the islands, had been debatable for quite long time. In order to confirm the species identity, DNA barcoding was carried out using two plastid barcode markers. For this, ribulose- 1, 5-biphosphate carboxylase/ oxygenase large subunit (*rbcL*) gene and *psbA-trnH* spacer regions were used. Results revealed that the correct identity of woody pepper is *Piper pendulispicum*. Literature survey suggested that so far the species has not been reported from India or these islands and hence, the taxon has been added as a new species for the country.

Studies in seedling progenies of clove

Ajit Arun Waman and Pooja Bohra

Six selected seedling progenies of clove were studied for various morphological parameters and significant differences were noticed for a number of characters including leaf length (10.75 – 12.09 cm), petiole length (1.80- 2.02 cm), leaf weight (0.53- 0.68 g), fresh bud length (15.47-17.77 mm), dry bud length (12.78-15.05 mm), fresh bud weight (0.25- 0.32 g) and dry bud weight (0.08- 0.12 g). Cluster parameters such as number of buds per cluster (5.96 – 11.24), cluster weight (2.27- 4.20 g), cluster length (52.10- 60.13 mm) and cluster spread (36.44- 48.58 mm) also showed significant variations among the collections. Cumulative mean fresh bud yield, dry bud yield and drying recovery were calculated for the period 2017-18 to 2022-23. Cumulative mean fresh bud yield varied from 3.16 kg (Sa/C-5) to 4.50 (Sa/C-1) among the evaluated progenies. Cumulative dry yield of bud was found to be the highest 1.58 kg in Sa/C-1, which remained statistically on par with Sa/C-2 (1.45 kg), Sa/C-4 (1.44 kg) and Sa/C-6 (1.35 kg). Drying recovery of the buds ranged between 30.80 and 35.38%. Plant height varied from 9.6 m (Sa/C-6) to 14.2 m (Sa/C-1), girth at base ranged between 45.0 and 75.0 cm, while girth at 1.2 m height varied from 39.8 cm (Sa/C-5) to 80.0 cm (Sa/C-2).

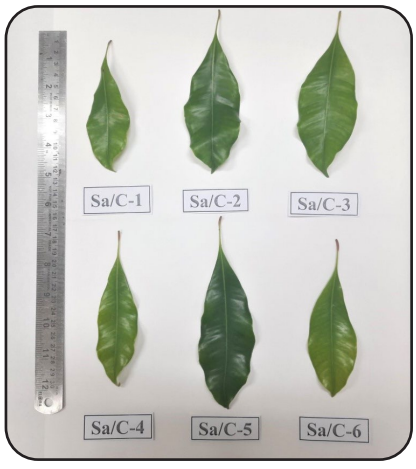

Plate 1. Leaf morphology of six seedling progenies of clove

Tuber crops collection and conservation

I. Jaisankar

Germplasm exploration undertaken in Car Nicobar Island resulted in collection of 11 unique accessions of different tuber crops which have potential for ensuring food security under marginal growing environments. Passport data of four accessions of Greater Yam and three accessions of Colocasia was submitted to ICAR-NBPGR and IC numbers were alloted. Besides, 12 sweet potato varieties collected from ICAR- CTCRI, Thiruvananthapuram were conserved at ICAR-CIARI, Port Blair for further multiplication.

Plate 2. Tuber crop germplasm collected from Car Nicobar Island

Germplasm collection

Prabhu P.

An exploration was conducted in the Ramnagar Panchayat of the North and Middle Andaman district. Local cultivars of vegetables were systematically collected from both farmers and natural habitats. The collected germplasm included: one sponge gourd (*Luffa cylindrica*), one ridge gourd (*Luffa acutangula*), two bottle gourds (*Lagenaria siceraria*), one tree bhendi (*Abelmoschus caillei*), Yard long bean (*Vigna unguiculata* ssp. *sesquipedalis*), one ivy gourd (*Coccinia grandis*), while one malabar spinach (*Basella alba*), one thornless ber (*Ziziphus* sp.) germplasm was collected from South Andaman.

Plate 3. Thornless ber Germplasm

Evaluation of snap melon (*Cucumis melo* ssp. *agrestis* var. *melo*)

Prabhu P.

The suitability of Snap melon (*Cucumis melo* ssp. *agrestis* var. *melo*) for salad purpose was evaluated with 36 melon genotypes under island conditions. Among these, the following genotypes demonstrated superior performance: IC-0647731, IC-0647729 and IC-0647725. These genotypes reached optimal harvest readiness within a span of 30 to 35 days, making them ideal for salad consumption. Notably, each fruit weighed between 200 to 270 g at the time of harvest.

Plate 4. Salad type snap melon genotypes

Phytochemical analysis of Andaman Padauk (*Pterocarpus dalbergioides*)

I. Jaisankar

The Phytochemical analysis of Andaman Padauk (*Pterocarpus dalbergioides*) bark methanol extracts were subjected to gas chromatography-mass spectrometry (GC-MS). The obtained spectra were analysed. A total of 131 components were found out of which 24 classes of phytoconstituents were found to constitute 84.59% area. The results showed presence of components such as 4H-Pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl- (3.11%), 2-Methoxy-4-vinylphenol (3.58%), Guanosine (13.76%), Mome inositol (26.68%). Thus the methanol bark extract shows that the major probability of phytochemical which possesses antioxidant, anti-inflammatory, antimicrobial antitumor activities, analgesic, anti-germination, intracellular signaling pathways, neuroprotective properties, anti-alopecic, anti-cirrhotic, anti-neuropathic and cholesterolytic, lipotropic and is mostly preferred for various therapeutic purposes.

Nutritional, anti-nutritional and anti-oxidant activity of *Pandanus tectorius*

I. Jaisankar

Pandanus tectorius collected from three different locations of Andaman and Nicobar Islands came up with flourishing information that the pulp had significantly high carbohydrate (20.073 ± 0.043%), ascorbic acid (4.080±

0.026%), phenols (2.667 ± 0.039%), flavonoid (0.359 ± 0.05%), tannins (5.363 ± 0.136%), oxalates (0.573 ± 0.048%) and TSS (7.413 ± 0.028%) content with added hydroxyl RSA (88.5 ± 0.278%) and superoxide anion RSA (78.11±0.026%). The seeds also contained significantly high protein (12.830 ± 0.105%) and saponin (6.273 ± 0.047 %) content with high DPPH (97.533 ± 0.001%) activity.

Economics of the sequential cropping system under padauk plantation

I. Jaisankar

The mean B:C ratio of the sequential copping system under Padauk plantation were calculated. The highest BCR of 9.14 was recorded in the Brinjal crop followed by Banana with 7.88 BCR and the minimum BCR of 1.22 was recorded in *Hibiscus sabdariffa* crop.

Successful demonstration of Artificial Insemination in Rabbit

R.R. Alyethodi and E.B. Chakurkar

The institute has successfully developed an Artificial Vagina (AV) tailored for semen collection from rabbit models. Scientists also pioneered the creation of an innovative Artificial Insemination (AI) gun specifically designed for rabbits. The team lead by Dr. E. B. Chakurkar, Director and Dr. R.R. Alyethodi, Scientist, Animal Science Division as the Principal Investigator. Through the utilization of these indigenously developed AV and AI gun technologies, five inseminations have been conducted in rabbits, resulting in prolific kindling with the birth of numerous healthy offspring.

Plate 5. Director, ICAR-CIARI, inseminating the Rabbit using an indigenously developed AI Gun

Opportunities and challenges of sustaining agriculture in A & N District and Minicoy: A behavioural perspective

S.K. Zamir Ahmed, D. Karunakaran, Gladston Y., Y. Ramakrishna and Sharath Yeligar

The study revealed that migration behavior in youth to increase initially and reach peak during age of 21-25 and then declines and stabilizes till dawn of youth age *i.e.* 35 years. Policymakers must focus on infrastructure development for education with specific focus on higher studies and also enhance quantity and quality of human resources in education sector by regular recruitments and capacity building programs. Exploring online experts and courses may also be promoted to increase awareness among the Island students. New Education Policy is a welcome step to tackle this migration among early youth as it provides flexibility and also promotes integration of offline classes with online learning platform. Provisions of skill enhancement trainings, creating wider job opportunities, promotion of agro ecotourism are some suggestions to avoid this brain drain due to lack of job opportunities. Geolocation of 120 respondents, each in the farmers and youth category, representing three districts of ANI was done for expressing better understanding of the target groups selected.

National Surveillance Programme for Aquatic Animal Diseases (NSPAAD)

K. Saravanan, J. Praveenraj and R. Kiruba Sankar

The information collected as a part of passive surveillance comprising 1277 baseline data of freshwater fish farms with geo-reference details have been incorporated in Dweep Geo Portal hosted by ICAR-CIARI, Port Blair.

A total of 91 baseline data, disease cases and biological data information were submitted in the National Database on Aquatic Animal Diseases hosted by ICAR-NBFGR, Lucknow. Altogether, six disease cases were reported due to bacterial infection, parasitic infestation, and water quality issues from the freshwater fish farms located at Andaman Islands and provided the management measures. The mobile application, 'Report Fish Disease' is being popularized among the stakeholders through various capacity-building programs to facilitate the real-time reporting of aquatic animal diseases in Andaman and Nicobar Islands.

All India Network Project on Mariculture (AINP)

R. Kiruba Sankar, K. Saravanan, Praveenraj Jayasimhan and Chittaranjan Raul

Seaweeds *Acanthopora spicifera* and *Gracilaria salicornia* were cultured in bamboo and plastic rafts (20 rafts) of 1 × 1m size using the tube net method. Seaweeds were collected from Burmanallah waters and stocked in the rafts. Seaweeds started attaching to the substrates within a week and fragments of *Acanthopora spicifera* started growing. The rafts were cleaned every three days to remove the algal growth and barnacles. Site selection maps for the South Andaman region were completed.

Plate 6. Growth of seaweeds in rafts in open sea conditions

Breeding of Black angel fish

J. Praveenraj, R. Kiruba Sankar and K. Saravanan

Pterophyllum scalare (Black angel fish) has been bred successfully under the Island condition. A total of two batches of angel fish were successfully hatched with numbers ranging from 50 to 200 per batch. The ideal water conditions observed for breeding angel fish were pH 6.5, water temperature 28°C, TDS ≤500 ppm and alkalinity 150 ppm.

Shrimp Biofloc Culture

Chittaranjan Raul, K. Saravanan, J. Praveenraj and S.K. Zamir Ahmed

Biofloc culture shrimp (*Penaeus vannamei*) was attempted in Marine Hill Research Laboratory of ICAR-CIARI. The PCR negative PL-10 shrimp seed was procured and acclimatized before the start of culture. The PL was stocked @50nos/ cubic L water in 4 m diameter circular tarpaulin biofloc tank. The floc was prepared using jaggery and shrimp feed with microbial inoculum to maintain C:N ratio 15:1. After 3 to 4 days of vigorous aeration the floc volume was measured by Imhoff cone. The floc volume above 20 ml/L ready to inoculate in biofloc tank. The shrimps were fed 4 to 5 times per day @50 to 10% of body weight with a commercial protein feed of 34% crude protein content. To maintain floc volume in the culture tank, carbon source (Jaggery) was added to the system to maintain optimum C:N ratio for continuous biofloc generation.

Schedule Tribe Component

Programme	Nos.	No of Beneficiaries
Trainings	16	631
Demonstration	12	261
Input distribution	4	715

Important Events Held

ICAR-CIARI registered three animal breeds from Andaman & Nicobar Islands

ICAR-National Bureau of Animal Genetic Resources, Karnal, Haryana, recognised the Andamani goat, Andamani pig, and Andamani duck as new breeds. Under the 'Mission towards Zero Non-descript Animal Genetic Resources of India', ICAR- Central Island Agricultural Research Institute, Port Blair, in collaboration with the Directorate of Animal Husbandry and Veterinary Services and the Andaman & Nicobar Administration, have jointly taken up the initiative for characterising the native animal and poultry genetic resources. The breed characterization was conducted, and a genetic profile was completed, following which an application to register the breeds was submitted. The ICAR-Breed Registration Committee, has approved the registration of Andamani goat, Andamani pig, and Andamani duck as distinct breeds.

Plate 7. Registered three animal breeds

Republic Day celebration

ICAR-CIARI, Port Blair celebrated the 75th Republic Day with great patriotic zeal and fervour. Dr. E.B. Chakurkar, Director, ICAR-CIARI unfurled the tricolour amidst a large gathering at zero point after paying floral tribute to the great leaders of India. In his address, he appreciated the scientists and staff for the achievements made by the Institute during 2023 which has brought laurels to the Institute both at National & Island Level.

Plate 8. Director ICAR-CIARI unfurls national flag at zero point

Kisan Mela

The Kisan Mela, focused on Agripreneurship Development in Islands, was organized by ICAR-CIARI on March 20, 2024. Around 500 farmers from South, Middle, and North Andaman & Nicobar districts participated. The Chief Guest Dr. Mani Chellapan, Dean, College of Agriculture (KAU), Thrissur, Kerala praised ICAR-CIARI's technology advancements, Dr. Lal Ji Singh Joint Director, Botanical Survey of India, ANRC, Port Blair highlighted women's role and flora diversity. Padma Shri Smti. Kamachi Chellammal thanked ICAR-CIARI and KVK for their support in her national recognition.

Plate 9. Kisan Mela-2024

Workshop on Sustainable Plant Protection Strategies (SPPS- 2024)

The Andaman Science Association and ICAR-CIARI jointly organized the SPPS-2024 workshop on sustainable plant protection strategies during March 21-22, 2024. Dr. N.K. Krishna Kumar, Ex-DDG of Horticulture Science at ICAR-New Delhi, inaugurated the event, while Shri. Vikram Singh, DANICS, Director of Agriculture and Dr. Mani Chellapan, Dean, College of Agriculture, Kerala Agricultural University, Thrissur graced the occasion as Guests of Honour. The workshop featured talks on topics such as disease and pest-resistant varieties, sustainable pest management, and climate change's impact on pests and diseases. Notable speakers included Dr. T.K. Behera, Dr. N.K. Krishna Kumar, Dr. Mani Chellappan, Dr. Vinayaka Hegde, Dr. R. Selavarajan, and Dr. A.N. Shylesha. A total of 114 participants including scientists of ICAR-CIARI, officials of KVKs, Department of Agriculture and CIPMC, progressive farmers from all three districts of Andaman and Nicobar Islands, students etc. attended the event. Dr. Pooja Bohra served as the Organizing Secretary of the event.

Plate 10. Workshop on Sustainable Plant Protection Strategies

First fish aggregating device deployed at Regional Station, Minicoy

ICAR-Central Island Agricultural Research Institute's Regional Station at Minicoy installed the first fish aggregating device (FAD) on February 17, 2024, aimed at securing the livelihoods of Minicoy's tribal fisher community. The FAD comprises a nylon rope bow shackle, thin polyester webbing sling, galvanized swivel FRP buoy, and concrete block anchor, attracting pelagic tuna species to enhance fish productivity and reduce search time during fishing. With the continuous persuasion and effort of the team under the leadership of Dr. Eaknath B. Chakurkar, Director, ICAR-CIARI, Port Blair the FAD was anchored in the open ocean at the distance of 10.5 nautical miles from the shore along with the Department of Fisheries. This initiative aligns with Minicoy's tribal fisheries' goals of ensuring fish availability, reducing fuel consumption, carbon emissions, and improving vessel safety.

Plate 11. First fish aggregating device deployed

Awards/ Honours/Recognitions

Date	Name	Achievement/Recognition	Event
23/01/2024	Dr. Ajit Arun Waman	Invited Expert	Meeting on the Strategies for promotion of Cinnamon at National Level organized by Directorate of Arecanut and Spices Development, Kozhikode, Kerala
01/02/2024 to 03/02/2024	Dr. Prabhu P.	First Best Oral Presentation award	3rd Indian Horticultural Summit cum International Conference, Jaipur

Trainings/ Meetings/Campaigns

Name of the training/ meeting/ campaign programme / field day	Venue	Date	Participants (M/F/T)	Organizing committee/ coordinators
Training on marine turtle monitoring through citizen science in Car Nicobar	Car Nicobar	22/01/2024 to 24/01/2024	25	R. Kiruba Sankar, J. Praveenraj, K. Saravanan, Mohd. Sarief and S.K. Zamir Ahmed
Training on Improved Organic farming Practices for Island Based Cropping system and Input Distribution under Institute STC and AICRP-TC STC	Chotta Enaka, Kakana, Pilpillow and Chowra Islands of Nancowrie group of Islands	28/01/2024 to 31/01/2024	148/63/211	I. Jaisankar and T. Subramani
Exposure visit of officials from State Agriculture Department of Madhya Pradesh.	ICAR-CIARI	31/01/2024	03/06/09	J. Praveenraj, R.R. Alyethodi, Talaviya Harshangkumar and S.K. Zamir Ahmed
Dry Weather Management in Vegetables, Plantation crops and Livestocks, Under Gramin Krishi Mousam Sewa	Kamorta	01/02/2024	23/17/40	I. Jaisankar and T. Subramani

Name of the training/ meeting/ campaign programme / field day	Venue	Date	Participants (M/F/T)	Organizing committee/ coordinators
Three days exposure visit cum training programme on 'Quality Seed and Planting Material in Agri-horticultural Crops for Nicobarese Tribal Farmers'	ICAR-CIARI	07/02/2024 to 09/02/2024	07/04/11	P.K. Singh, Pooja Bohra and Ajit Arun Waman
Tuber Crops Diversity Fair	ICAR-KVK, South Andaman	08/02/2024 to 09/02/2024	52/29/81	I. Jaisankar, Y. Ramakrishna and T. Subramani
Training on Freshwater Ornamental Fish Culture for Entrepreneurship Development	Division of Fisheries Science, ICAR-CIARI, Port Blair & NABARD	10/02/2024 to 12/02/2024	08/12/20	J. Praveenraj, K. Saravanan, R. Kiruba Sankar, S.K. Zamir Ahmed and D. Karunakaran
Three days training programme on 'Appropriate cultivation and postharvest practices for producing quality spices in the plantation crops based cropping systems'	ICAR-CIARI	19/02/2024 to 21/02/2024	13/05/18	Ajit Arun Waman, Santosh Kumar, Pooja Bohra and P.K. Singh
Exposure visit and Meet the Scientist programme of Science Centre, Port Blair for graduate students on the occasion of National Science Day-2024	ICAR-CIARI	22/02/2024	14/41/55	Ajit Arun Waman
Field day on Sequential cropping system for improving productivity and livelihood security	ICAR-CIARI, Garacharma, KVK, Port Blair	23/02/2024	17/13/30	I. Jaisankar, T. Subramani and Y. Ramakrishna
Workshop on ICT tools for marine conservation for Nicobar tribes	ICAR-CIARI	24/02/2024	14/20/34	R. Kiruba Sankar, J. Praveenraj, K. Saravanan and S.K. Zamir Ahmed
Training on Freshwater Ornamental Fish Culture for Entrepreneurship Development for Nicobarese Youth.	ICAR-CIARI	23/02/2024 to 25/02/2024	20/29/49	J. Praveenraj, S.K. Zamir Ahmed, K. Saravanan, R. Kiruba Sankar, D. Karunakaran and Chittaranjan Raul
Exposure visit of class VI of GSSS, Bambooflat to ICAR-CIARI, Port Blair.	ICAR-CIARI	26/02/2024	08/07/15	S.K. Zamir Ahmed
Exposure visit of five senior level officials from State Fisheries Department, Kerala to CIARI	ICAR-CIARI	26/02/202 to 29/02/2024	03/02/05	J. Praveenraj, K. Saravanan, R. Kiruba Sankar and S.K. Zamir Ahmed
Capacity building programme on Scientific goat farming	Nimbudera and Baratang	02/03/2024 to 03/03/2024	75	R.R. Alyethodi, P. Perumal and Jai Sunder
Scientific Tuber crops cultivation and Input Distribution	ICAR-KVK South Andaman	24/03/2024	16/0/16	I. Jaisankar, Santosh Kumar and Y. Ramakrishna

Plate 12. Nicobarese farmers attending training on Spices

Plate 13. Training on ornamental fish farming to Nicobarese youth

Plate 14. Technologies of ICAR-CIARI being showcased at the National Horticulture Fair- 2024 at ICAR-IIHR, Bengaluru

Publications

Research Articles

Kiruba, Sankar, R. and Barman, J. (2024). The benefits and challenges of citizen science for coastal wetlands management in the Andaman and Nicobar archipelago. *Environmental Sustainability.* https://doi.org/10.1007/s42398-023-00296-3

Swarnam, T.P., Velmurugan, A., Subramani, T., Ravisankar, N., Subash, N., Pawar, A.S., Perumal, P., Jaisankar, I. and Roy, S.D. (2024). Climate smart crop-livestock integrated farming as a sustainable agricultural strategy for humid tropical islands. *International Journal of Agricultural Sustainability*. https://doi.org/10.1080/14735903.2023.2298189

Swarnam, T.P., Velmurugan, A., I Jaisankar, Pandey, S.K., Panwar, A.S. and Ravisankar, N. (2024). The role of traditional knowledge in climate change adaptation among the Nicobarese of Central Nicobar Islands, India. *Indian Journal of Traditional Knowledge*, **23**(1): 6-15. DOI: 10.56042/ijtk.v23i1.8138.

Waman, A.A., De, A.K., Bohra, P., Sawhney S. and Mishra S. (2024). DNA barcoding-assisted confirmation of the botanical identity of Woody Pepper (*Piper pendulispicum* C. DC., Piperaceae): an addition to the Indian Flora. *Genetic Resources and Crop Evolution* https://doi.org/10.1007/s10722-024-01920-9.

Popular article

Jerard, B.A., Jaisankar, I and Damodaran, V. (2024). Home scale Virgin Coconut oil production. *Indian Coconut Journal*. **LXVI**(7): 18-21

Book edited

Waman, A.A., Bohra, P., Singh, P.K., Cheriyan, H., and Chakurkar, E.B. (2023). Proceedings of the National Conference on Spices, Aromatic and Medicinal Plants for Economic Prosperity and Ecological Sustainability (SAMPEPES-2023) held during October 5-6, 2023 at ICAR-Central Island Agricultural Research Institute, Port Blair, Andaman and Nicobar Islands, pp. 1- 54.

IPRs/Commercialization of Technology

Patent granted

- Method of Determining sex of non-ratite birds. Arun Kumar De, Jai Sunder, T. Sujatha, Perumal P, S.K. Zamir Ahmed, A. Kundu and D. Bhattacharya. (Patent no. 513241, Date of grant : 21st February, 2024).

Participation in seminars/ symposia/ conferences/ workshop

Name	Programme	Venue and Date
I. Jaisankar	International Webinar on 'Functional Phenomics for Improved Climate Resilience in Tropical Agriculture'	ICAR-Central Tuber Crops Research Institute, Sreekariyam, Thiruvananthapuram, Kerala on 04 January, 2024.
J. Praveenraj	National Workshop on Advances in Fish Systematics: Morphological and Molecular Approaches	Participated as Expert & resource person ZSI in association with NBFGR at Hyderabad during 18-19 January, 2024.
P. Prabhu	3rd Indian Horticultural Summit cum International Conference	Held at Rajasthan Agricultural Research Institute, Jaipur during 1-3 February, 2024.
Ajit Arun Waman and P. Prabhu	National Horticulture Fair-2024	Participated and presented Institute technologies through stall at ICAR-Indian Institute of Horticulture Research, Bengaluru during 05-07 March, 2024
Rafeeque. R. Alyethodi	NABL Refresher meet	Bhubaneswar, 15 March, 2024
	Annual Review Meet, AICRP On Goat Improvement	ICAR-CIRG, Makhdoom, during 18-19 March, 2024
All scientists	16th Scientific Advisory Meeting of KVKs of ANI	ICAR-CIARI, Port Blair , 16 February, 2024
All scientists	Workshop on "Sustainable Plant Protection Strategies for Andaman and Nicobar Islands (SPPS- 2024)"	ICAR-CIARI, Port Blair, during 21-22 March, 2024
R. Kiruba Sankar	National consultative workshop on BOBLME Project II implementation in the Bay of Bengal region (INDIA-BOBLME)	Chennai organized by Bay of Bengal-Inter Governmental Organization (IGO), 21-23 March, 2024
J. Praveenraj	IUCN Freshwater Fish Red Listing Workshop'	Participated as National expert in Workshop jointly organized by Manipur University, Deutsche Gesellschaftfür Internationale Zusammenarbeit (GIZ) GmbH (GIZ) funded Protection and sustainable management of aquatic resources in the Northeastern Himalayan region of India (NERAQ) Project and Indian Council for Agricultural Research (ICAR) - Directorate of Coldwater Fisheries Research (DCFR), at Guwahati during 27-29 March, 2024.

Distinguished Visitors

- Dr. Sarita Kelkar, Dean, Bombay Veterinary College to ICAR-CIARI, Port Blair on 18 January 2024.
- Dr. Rahul Rathod, Deputy Collector, Minicoy visited farm on 23 February, 2024 for the scientific assistance to control hairy caterpillar (*Euproctis fraterna*).
- Dr. Ashok Kumar Singh, Director of ICAR-Indian Agricultural Research Institute, visited ICAR-CIARI on 16 January, 2024.
- Dr. N.K. Krishna Kumar, Ex DDG(HS) visited on 20 March, 2024 and inaugurated modern dairy unit
- Dr. R. Selvarajan, Director, ICAR-National Research Centre for Banana, Trichy visited the experimental blocks including of banana conservation block, Garcinia conservation block and Horticultural Plants Propagation Unit of the Institute on 23 March, 2024.
- Dr. Manichellapan visited ICAR-CIARI on 20 March, 2024 and inaugurated Kisan Mela.

Plate 15. Visit of Dr. Sarita Kelkar, Dean

Plate 16. Visit of Dr. Ashok Kumar Singh, Director, IARI

Plate 17. Visit of Dr. R. Selvarajan, Director, NRC, Banana

New projects/ initiatives & Infrastructure development

- Modern diary unit has been inaugurated on 21 March, 2024.
- A new project on Accreditation Protocol for Agroforestry Nurseries in Andaman and Nicobar Islands has been approved by ICAR- CAFRI, Jhansi .

Personnel

Retirement

- Shri. Prabhat Kumar Roy, AAO on 31 January, 2024.

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