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From the Director

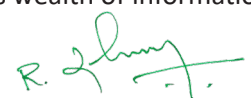
I am delighted to present the newsletter for the quarter July–September 2024 to our esteemed readers. This edition highlights the remarkable achievements on research, outreach, and capacity-building efforts of ICAR-NRCB.



In the field of **research**, significant progress has been made, including the development and transformation of CRISPR/Cas9 constructs in *cv. Grand Nain* for editing genes such as **LBD 20, DMR 6, Nudix hydrolase, Pelota, and eIF4E** to enhance resistance against Fusarium wilt and viruses (BBTV, BBrMV, and CMV). In crop improvement, two farmer's varieties, *Thottu Chingan* and *Kuthiraival Chingan*, were successfully registered with the PPV&FRA. Advancements also include the identification of Fusarium wilt-resistant mutants in *cv. Grand Nain*. Our efforts in crop production have focused on natural farming practices and IoT-enabled precision irrigation to enhance yield and efficiency. The Centre has developed sustainable packaging solutions, such as smart active films integrating banana bract anthocyanin with modified starch, and exploring banana peel's potential for functional food applications.

Under **outreach**, ICAR-NRCB organized 66 capacity-building programs benefiting 1,630 stakeholders, participated in four national exhibitions, and directly reached over 1,70,000 beneficiaries. ICAR-NRCB technologies and news were published in 60 different social and print media. Our team also successfully transferred various technologies, such as banana flour-based weaning food and innovative ELISA kits, to multiple entrepreneurs, reinforcing our commitment to technology dissemination and farmer welfare.

These accomplishments reflect the collective efforts of our dedicated team. I extend my gratitude and appreciation to the editorial committee for their diligent work in compiling this newsletter and invite all readers to engage with and benefit from its wealth of information.



(R. Selvarajan)
Director

Research in Focus

Focus on Gene Editing of Grand Nain Banana

Completed proximate analysis for 20 events of PVA-enriched transgenic Grand Nain bananas and 5 events of iron-enriched transgenic bananas. Results revealed a 10-fold increase in beta-carotene and a 5-fold increase in iron content.

Developed albino plants by editing the phytoene desaturase (PDS) gene (Fig. 1) using the CRISPR-Cas9/PDS-sgRNA1 construct. This work demonstrated the efficiency of the modified construct in knocking out the gene.

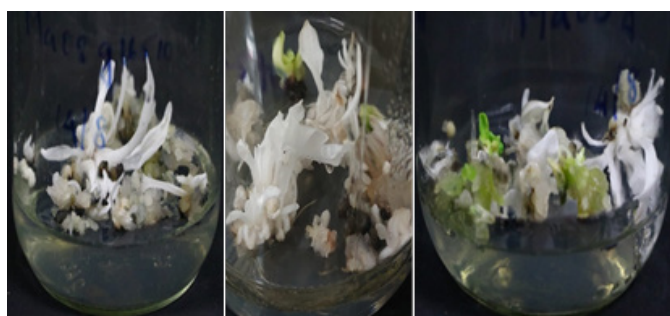


Fig. 1 PDS edited cv. Grand Nain

CRISPR/Cas 9 constructs have been developed and transformed for editing LBD 20, DMR 6, Nudix hydrolase and Pelota, eIF4E to develop resistance against *Fusarium* wilt, and viruses (BBTV, BBMV and CMV).

Focus on Common Incubation Centre, MoFPI, PMFME Scheme

The Common Incubation Centre (CIC) at the ICAR-NRCB is a state-of-the-art facility designed to promote entrepreneurship and innovation in the banana & food processing. It offers infrastructure, technical expertise, and machineries for the production of value-added banana and food products. It has five processing lines with all required machineries such as I. Primary processing of fruits and vegetables; II. Juice and beverages and intermediate moisture food processing section; III. Flour and flour-based bakery products; IV. Twin screw extruder and accessories; V. Pickles and related products along with Food testing and quality control lab.

I. Primary processing of fruits and vegetables - Production line - I



III. Flour and flour based bakery products - Production line - III



V. Pickles and related products - Production line - V



II. Juice and beverages and intermediate moisture food processing section - Production line - II



IV. Twin screw extruder and accessories - Production line - IV



Food testing and quality control lab



M/s. Imaya Marketing, Trichy



Major Research Highlights

Crop improvement

Farmers Varieties Registration

- Farmers' varieties, namely *Thottu Chingan* and *Kuthiraival Chingan*, have been successfully registered with the Protection of Plant Varieties and Farmers' Rights Authority (PPV&FRA), New Delhi and the registration certificates have been received.

Mutation Breeding

- Pot screening of mutagenized population of cv. Grand Nain against *Fusarium oxysporum* f. sp. *ubense* (Foc) races 1 and TR4 resulted in the identification of two mutants showing resistance to Foc race 1. These resistant mutants have been successfully established under *in vitro* conditions.

Gamma irradiated Grande Naine (ECS-20Gy) plants showing resistant to Foc race 1 under pot culture conditions



GN –Control plant

GN (ECS-20Gy) Foc race 1 - Resistant lines

Crop Production & Post Harvest Technology

- **Natural farming:** Under the banana natural farming trial, the organic standards for soil preparation was carried out with the guidelines provided by the Bhartiya Prakritik Krishi Paddhti (BPKP), as part of the Paramparagat Krishi Vikas Yojana (PKVY) umbrella scheme.
- **Sensor and IoT based drip irrigation:** An IoT enabled soil moisture sensor-based irrigation system was installed, with the root zone moisture set at three different levels of moisture in banana farming to provide precise irrigation. The treatment -50 kPa moisture tension (T2) recorded a bunch yield of 30.25 Kg which was on par with the control (T1-32.75 Kg). However, the moisture tension of -75kPa (T3) significantly reduced the bunch yield to 23.75 Kg. Besides, the days to flowering for treatments T1 and T2 was similar, whereas T3 experienced a delay in flowering by 17-19 days. By implementing the IoT enabled moisture sensor-based irrigation system, water saving of 25-30% was achieved in T2, compared to the existing drip irrigation system, without compromising bunch yield and fruit quality.



- **Smart intelligent packaging indicator:** Utilization of banana starch and anthocyanin from bract of male flower could be the option to make functional, interactive packaging films. Smart films were developed using biopolymers such as Banana Native Starch (BNS), Banana Modified Starch (BMS), and Corn Starch (CS) incorporating Banana Bract Anthocyanin (BBA) extract as a quality indicator for chicken meat. Integrating BBA with BMS, chitosan and PVA and glycerol could produce highly pH sensitive and stable active films as visual indicators of freshness of the products like chicken meat and pH sensitive horticultural produce.
- **Effective use of banana peel:** Banana peel is generally considered as a waste in processing industries. However, it is a powerhouse of nutrients and rich in dietary fibre and bioactive compounds like phenolics, flavonoids and tannins. The current study is intended to develop a functional food product with the incorporation of banana peel powder (BPP). BPP was added at different ratios of 2%, 4%, 6% and 8% and muffins were prepared.
- **Nanocellulose-induced banana fiber epoxy composites:** In the pursuit of sustainable and high-performance materials, banana fibre reinforced composites were developed. The purpose was to enhance mechanical properties of composites such as tensile, flexural, and impact strength, which are critical for industrial applications. For preparation of composite, epoxy polymer and banana fibre were chosen as a polymer matrix and reinforcement material, respectively. In addition, nanocellulose was added as a secondary reinforcing material (filler). The addition of nanocellulose filler significantly improved the composite's mechanical properties by enhancing the fiber-matrix interaction, facilitating better stress transfer. The developed product has the potential for high-strength applications in various industries.





treatments, indoxacarb (0.01%) and spinosad (0.011%) demonstrated the highest efficacy, achieving 100% mortality, followed by lambda-cyhalothrin (0.010%) and emamectin benzoate (0.8 g/L), which showed 93.33% and 90% mortality, respectively. Among the EPFs, NRCB EPF Ma 50 (10 ml/L) and NRCB EPF Bb 22 (10 ml/L) recorded 96.67% and 90% mortality, respectively, within 24 hours.

An evaluation was conducted on *in vitro* derived popular banana cultivars, including Red Banana (AAA), Grand Naine (AAA), Ney Poovan (AB), Hill Banana (AAB), Poovan (AAB), Nendran (AAB), Karpuravalli (ABB), and Kaveri Kalki (ABB), for their resistance to root lesion nematode (*Pratylenchus coffeae*) and spiral nematode (*Helicotylenchus multicinctus*) under pot conditions through challenge inoculation. The results revealed that the cultivars Ney Poovan and Hill Banana exhibited moderate resistance (moderate susceptibility) to both nematodes, while the remaining cultivars showed susceptible / highly susceptible reactions.

Crop Protection

Spodoptera exigua infestation was observed on the banana cultivar Poovan. Laboratory bioassays were conducted to evaluate the efficacy of seven insecticides, azadirachtin, and two entomopathogenic fungi (EPFs) against this emerging pest. Among the tested

2. Transfer of Technology (ToT)

S. No	Date	Technology	Technology purchaser
1.	06-07.08.2024	Banana flour-based weaning (Baby) food	Mr. Anish John, Mavila Villa, Nallila (PO), Nedumpana, Kollam - 691515, Kerala
2.	12-13.08.2024	Triple Antibody Sandwich ELISA (TAS-ELISA) kit for detection of Banana Bract Mosaic Virus (BBrMV)	The Professor & Head, Banana Research Station (BRS), Kerala Agricultural University, Kannara P.O, Marakkal, Thrissur - 680652, Kerala
3.	21.08.2024	Direct antigen coating ELISA (DC-ELISA) for the detection of cucumber mosaic virus (CMV) and banana bract mosaic virus (BBrMV)	M/s. Jayasree Biotech, Hosur, Krishnagiri, Tamil Nadu
4.	28-29.08.2024	Dehydrated / fortified / flavoured ripe banana fig	Mr. Satish Viswanathan, M/s. Parvat Premium Agro Products, 34/002, Mantri Residency, Bannerghatta Road, Opp Meenakshi Temple, Bangalore - 560076, Karnataka
5.	10-11.09.2024	Central Core Stem Juice (Low Calorie / Fortified)	M/s. Mahaorganic Farmers Producer Company Limited, Office No. 13 'B' Building, Anandmayi Apartment, Karve Road, Pune - 411004, Maharashtra
6.	18-19.09.2024	Post-harvest handling, packing, storage and ripening of banana for Domestic and Export Markets	Mr. I. Mohammed Rafeek, M/s. Happy Morning Export / Import, 11, Magestic Garden, Kuniyamuthur, Coimbatore – 641008, Tamil Nadu
7.	17-21.09.2024	Variety specific tissue culture protocols for commercial banana varieties	Mr. Rama Vijayaraja, 283, Old Street, Ko – Chathiram, Madhanagopala Puram (Po), Kurinjipadi (TK), Cuddalore – 607301, Tamil Nadu
8.	23-27.09.2024	Banana flour-based low glycemic prebiotic extruded snacks, Rhizome based hot extruded puffed snack, Low fat fortified & flavoured chips and Cost effective ripe banana powder & products	Mr. Tushar Kolhe, M/s. Amrutaya Processing (India) Private Limited, Flat No. 201, T-7, Forest Trails, Bhugaon Paud Road, Tehsil - Mulshi, Pune - 412115, Maharashtra



Mr. Anish John, Mavila Villa, Kollam, Kerala



The Professor & Head, Banana Research Station (BRS), KAU, Kerala



Mr. Satish Viswanathan, M/s. Parvat Premium Agro Products, Bangalore, Karnataka



M/s. Mahaorganic Farmers Producer Company Limited, Pune, Maharashtra



Mr. I. Mohammed Rafeek, M/s. Happy Morning Export / Import, Coimbatore, Tamil Nadu



Mr. Rama Vijayraja, Cuddalore , Tamil Nadu

MoU's Signed

S. No	Name of the company / Organization	Purpose	Date
1.	M/s. Jayasree Biotech, Hosur, Krishnagiri	Project Specific/ Technology	21.08.2024
2.	M/s. Impensus Electronics Pvt. Ltd, Chennai	Project Specific	09.09.2024
3.	M/s. Oleevia Foundation, Palakkad, Kerala	Project Specific	13.09.2023
4.	M/s. Mahadhan Agritech Ltd, Pune, Maharastra	Contract Research	24.06.2024



M/s. Jayasree Biotech, Hosur, Krishnagiri



M/s. Impensus Electronics Pvt. Ltd, Chennai

3. Outreach and Extension

Capacity development programme

S. No.	Particulars	No. of groups	No. of beneficiaries
1	On-campus one day Capacity Development Programme for Farmers (CDPF)	41	585
2	On-campus one day Capacity Development programme for Students (CDPS)	24	1005
3	On-campus two days ATMA training programme	1	40
Total		66	1630



Transfer of Technology through frontline exhibition activities

S. No.	Event	Organizer & Venue	Date	No. of Beneficiaries (Appox.)	Name of the Participants
1	Agri Intex-2024	CODISSIA Coimbatore	11.07.24-15.07.24	1,50,000	C. Karpagam, A. Mohanasundaram P. Durai, P. Ravichamy, R. Pitchaimuthu, S. Harishwar & S. Ajith Kumar
2	96 th ICAR Foundation Day	ICAR- NAAS complex,	15.07.24-16.07.24	10,000	R. Selvarajan, K. N.Shiva S. Backiyarani, C. Sivananth, S. Harishwar, S. Ajith Kumar
3	Agri Tech Expo-2024	CII & Rasi Seeds, Salem	03.08.24-05.08.24	12,000	C. Karpagam, M. Loganathan P. Ravichamy, R. Pitchaimuthu S. Harishwar, S. Ajith Kumar
4	ICAR-NRCB FD&Farmer Day-2024	ICAR-NRCB, Trichy	21.08.24	1,000	C. Karpagam, A. Mohanasundaram P. Durai, P. Ravichamy S. Harishwar, S. Ajith Kumar
Total				1,73,000	



Agri Intex Exhibition at Coimbatore



ICAR Foundation day Exhibition at New Delhi



NRCB Foundation day at Trichy

Transfer of technologies through print and electronic media

S. No.	Particulars	Nos.
1	No. of news/stories	13
2	Press meets & Phone communications	20
3	News published in print media	17
4	News published in electronic media (AIR &TV)	14
5	News published in social media	13
6	News stories reported in ICAR-NEWS (Online)	2

4. Other significant outreach programmes

Success Story

“Banana Sakthi”, a farmer-friendly technology, was licensed and transferred to two ICAR KVKs in

Namakkal and Karur districts and Srirangam Banana Farmer Producer Company Limited, Trichy. This mixture is being widely used by the farmers of Tamil Nadu and gaining popularity among the banana farming community.



Commercial production of Banana Sakthi at KVK, Namakkal

Commercial production of Banana Sakthi at SBPCL

78th Independence Day Celebrations at ICAR-NRCB

The ICAR-NRCB celebrated India's 78th Independence Day on August 15, 2024. Dr. R. Selvarajan, Director, ICAR-NRCB highlighted the institute's achievements and its commitment to advancing agricultural research and innovation.



ICAR-NRCB Highlights Low Glycemic Index Banana at 31st Foundation Day & Kisan Mela

ICAR-NRCB celebrated its 31st Foundation Day and Kisan Mela on August 21, 2024, under the theme "Banana Diversity and Wealth from Waste." The Director, Dr. R. Selvarajan highlighted the institute's significant achievements, including the development of two new banana varieties, Kaveri Kanchan and Kaveri Vaman, as well as the successful organization of 87 training programs that benefitted over 6,000 stakeholders. The Chief Guest, Dr. Trilochan Mohapatra, lauded NRCB's contributions to R&D in banana cultivation and emphasized the importance of adopting precision agriculture for sustainable farming. Among the key discussions, the relevance of low glycemic index bananas in promoting health was underscored for the benefit of diverse stakeholders.

19th Parthenium Awareness Week

As part of the 19th "Parthenium Awareness Week", ICAR-NRCB organized a Parthenium Awareness Program on August 16, 2024, at its Research Farm.



Swachhta Hi Seva campaign 2024

ICAR-NRCB actively participated in the “Swachhta Hi Seva” campaign from September 17 to October 2, 2024, under the theme “Swabhav Swachhata–Sanskaar Swachhata”. The campaign began with a Swachhta pledge and a plantation drive followed by interactive sessions with schoolchildren focused on waste management. Engaging activities such as a waste-to-art competition, human chain formation, rally, and temple cleanliness drive were organized to promote community awareness. On October 2, Swachhta Bharat Diwas, a local “black spot” was cleaned. Sanitation workers received specialized training to improve waste management practices, and their efforts were recognized with awards.



Interactive Meet on “Strengthening TN: Trichy–International Hub for Agricultural Exports”

The ICAR-NRCB, Tiruchirappalli, in collaboration with TNAPEX, organized an interactive meeting on September 27, 2024, on “Strengthening Tamil Nadu Connectivity: Trichy–International Hub for Agricultural Exports.” Dr. K. Alagusundaram, TNAPEX CEO, emphasized exportable agri-commodities to reach the state’s economic goals,

while Dr. R. Selvarajan of ICAR-NRCB highlighted the export potential of GI-tagged banana varieties.



XXVII IRC meeting



The annual XXVII Institute Research Council (IRC) meeting was held during 8–10 July, 2024 and 28th August, 2024 to review and discuss the ongoing research projects, salient research achievements, technologies developed and to finalize the technical programme for the next year.

Participation in workshop/Training/Seminar/Conference/meetings

Staff Name	Event	Date
R. Selvarajan	Online meeting on 100 Days Action Plan and Five-Year Targets	01.07.2024
	Online meeting on 96 th ICAR Foundation Day-Fruit diversity show with DDG	03.07.2024
	Virtual Seminar on AI & Machine Learning	05.07.2024
	ICAR-AUs Interaction meeting	06.07.2024
	Member (DG Nominee) for CAS promotion of scientists from ICAR-DFR, Pune	23-25.07.2024
	Interaction meeting with TC companies, Bengaluru, on mass production of tissue culture	27.07.2024 28.07.2024.
	Mupperum Vizha at Alagappa University, Karaikudi	17.08.2024
	Working Group on Post Harvest Engineering and Technology for Horticulture at NASC, New Delhi	31.08.2024
	Chaired a Technical Session during “International Conference on Plant Protection in Horticulture–Advances and Challenges” (ICPPH-2024).	25.09.2024
	Chairman for Technical Session on “Nano-Food Systems” in Global Conference on Nano Connect 2024.	05.09.2024
	Chaired a session on “Plant Variety Registration” during the IP Awareness Week hosted by ICAR-NRCP, Solapur.	28.08.2024
R. Selvarajan K. N.Shiva S. Backiyarani C. Sivananth S. Harishwar S. Ajith Kumar	96 th ICAR Foundation Day and Technology Day held at NASC, New Delhi	15.07.2024 16.07.2024
R. Thangavelu M. Loganathan	Conducted training cum demonstration on “ICAR-NRCB No2Wilt technology for management of Fusarium wilt” to officials from JSS KVK Suttur, Mysuru, College of Horticulture Sciences, UHS, Bagalkot and Department of Horticulture, Mysuru and 80 farmers from Mudduhalli village, Nanjangud, Mysuru	28.08.2024
S. Backiyarani	Course Director for Internship program for the students from EGS Pillay College, Nagapattinam	22.08.24
	IP awareness week organized by ICAR-IPTM	28.08.24
M.S. Saraswathi	District Executive Council Meeting for schemes under NHM and MI	07.08.24
P. Suresh Kumar	Attended Capacity building program on “Building Successful Incubation Ecosystem” organized by ICAR-NAARM, Hyderabad	03.07.24- 05.07.24
K. Nagendran P. Giribabu A. Mohanasundaram	Participated and presented a research paper at the International Conference on Plant Protection in Horticulture (ICPPH-2024) held at ICAR-IIHR, Bengaluru	25.09.24- 27.09.24
G. Prabhu K. Nagendran Pramod Shelake K. Kamaraju M. Badrinath	Attended 5 days Online training on IP awareness	27.08.24- 02.09.24

P. Giribabu	Attended NAHEP sponsored training program on 'Developing Winning Research Proposals (DWRP)' conducted at ICAR-NAARM, Hyderabad	15.07.24-19.07.24
A. Mohanasundaram	Participated and presented a research paper at the National Conference on Agro Ecological Farming System held at Pudukkottai on 11 th August 2024	18.08.24
C. Karpagam	Attended Annual review meeting of ICAR-ZTMCs/ITMUs	06.08.24
	Participated in Print Expo 2024, Chennai Trade Centre	22.08.24-24.08.24
	Participated in the Inaugural meeting of Agri Tech Expo-2024 at Attur	03.08.24
	Participated in the Inaugural meeting of Agri Index by CODDISIA	11.07.24
	Attended the selection committee meeting at KVK, Ariyalur	18.09.24
K.J. Jeyabaskaran	Served as Member (DG Nominee) for CAS promotion of scientists of ICAR-SBI, Coimbatore	01.07.24
	Participated and presented a research paper at the Global Conference on Nano-Connect in TNAU, Coimbatore	05.09.24
M. Loganathan	Given training to 80 farmers on "Management of rhizome rot of banana" organized by Bavani Amman FPO and Isha foundation at Bhavanisagar, Tamil Nadu	20.09.24
Pramod Shelake	Course Director for Internship program for B. Tech. students from Kongunadu College of Engineering & Technology	01.07.24-19.07.24

Education (Students, Guest lectures/ speakers), etc.

Staff Name	Events
R. Selvarajan	Invited Talk in the AGSC-2024 held at TNAU, Coimbatore on 12-08-2024.
	Chairman for Technical Session & lead speaker at Global Conference on Nano Connect 2024 in TNAU from 05.09.2024 to 06.09.2024.
	Special talk about ICAR-NRCB in Mylai Thiruvalluvar Tamizh Sangam programme.
	External expert for Viva-Voce of Ph. D. student at Annamalai University, Chidambaram, on 19.07.2024
S. Backiyarani	Delivered Guest lecture on "Banana Breeding is no more recalcitrant: An overview" at CPBG, TNAU, Coimbatore
K. Nagendran	Guided 3 internship students of M.Sc. (Botany) from Bharathidasan University.
P. Suresh Kumar	Value addition in Agro-Products (Fruits) during Uzhavae Thalai 6.0. AGRI INTEX 2024, 13 th July 2024.
M.S. Saraswathi	Guest lecture for the M.Sc. students of ICAR-IIHR, Bengaluru (FSC 504 2+1) on 10.08.2024
	Lecture on "Innovative Approaches in Plant Breeding with reference to Banana" at BDU, Trichy, on 10.08.2024
	Lecture on "Scholarships and Scope for Biotechnology" for the students of Shrimathi Indira Gandhi College for Women, Trichy, on 23.08.2024
	Acted as Convener for the Technical session in the 31 st Foundation Day & Kisan Mela organized by ICAR-NRCB on 21.08.2024
C. Karpagam	External examiner for the <i>viva-voce</i> of 10 students at KAU during 26.09.24-27.09.24

G. Prabhu	Guest lecture on “Recent Advances in Weed Management” at VIT, Vellore on 31.07.2024
	Talk on “Clump management for increasing the profit of farmers” in the 31 st Foundation Day & Kisan Mela organized by ICAR-NRCB.
K. J. Jeyabaskaran	Keynote address in the 9 th Agricultural Graduate Students Conference (AGSC) held at TNAU.
	Delivered a special lecture for the Indian Potash Limited Sales Officer training at Hotel Blossom, Trichy, on 19.07.2024
M. Loganathan	Guest lecture on “IPR on microbes and their products” to officials and students of TNAU on 10.09.24 at TNAU, CBE

Publications

Research article

Akech, V., Bengtsson, T., Ortiz, R., Swennen, R., Uwimana, B., Ferreira, C.F., Amah, D., Amorim, E.P., Blisset, E., Van den Houwe, I., Arinaitwe, I.K., Nice, L., Bwesigye, P., Tanksley, S., Uma, S., Backiyarani, S., Saraswathi, M.S., Mduma, H. and Brown, A. (2024) Genetic diversity and population structure in banana (*Musa* spp.) breeding germplasm. *The Plant Genome*, 17(3): e20497

Backiyarani, S., Uma, S., Agarwal, D.K., Durai, P., Thangavelu, R., Giribabu, P., Anuradha, C., Padmanaban, B., Perianayagaraj, S.E., Saraswathi, M.S. and Sharmiladevi, S. (2024) Broadening the genetic base of the diploids with biotic resistance to accelerate banana (*Musa acuminata* L.) breeding. *Indian Journal of Genetics and Plant Breeding*, 84(2): 280–291.

Nalawade, R.D., Singh, K.P., Roul, A.K., Agrawal, K.N., Sonawane, S., Mahore, A., Patel, A., Kumar, M., Shelake, P., Salem, A. and Elbeltagi, A. (2024) Study on the effect of geometrical and operational parameters on performance dynamics of modified rotary blades using DEM. *Scientific Reports*, 14(1): 19239.

Nargund, R., Verma, R.K., Ramesh, A., Sharma, M.P., Halli, H.M. and Govindasamy, P. (2024) Short-term benefits of tillage and agronomic

biofortification strategies on soil properties, carbon sustainability, and seed quality under the soybean–wheat cropping sequence in Central India. *CLEAN–Soil, Air, Water* <https://doi.org/10.1002/clen.202300300>.

Suresh Kumar, P., Xianglu Zhu., Amelia Keran, D., Pushpavalli, S., Shuprajhaa, T., Barbara Biduski., Liming Zhao. and Brijesh K.T. 2024. Effect of ultrasound assisted microencapsulation of fish oil and laminarin in banana starch and faba bean protein complex coacervation. *Food Hydrocolloids* 157: 110411. <https://doi.org/10.1016/j.foodhyd.2024.110411> NAAS rating. **16.70**

Raman P., Sassikumar D., Theertha Prasad., Suresh R., Shanmugam A., Sureshkumar P., Arulmozhi R. and Subrahmaniyan K. 2024. Elucidation of nutritional properties and cooking quality traits of under-exploited pigmented rice (*Oryza sativa* L.) landraces. *Indian Journal of Genetics and Plant Breeding*, 84(2): 292-294. <https://doi.org/10.31742/ISGPB.84.2.18>

Thangavelu, R., Suresh Kumar P., Shuprajhaa T., Varun G. and Selvarajan R. 2024. Influence of native biocontrol agents and newer molecules on controlling postharvest diseases, improving quality and extending the shelf-life of banana cv. Grand Nain (AAA). *Scientia Horticulturae* 334 (2024) 113292. <https://doi.org/10.1016/j.scientia.2024.113292>

Accolades

R. Selvarajan	“Ariviyal Kalanjiyam Award” from Mylai Thiruvalluvar Tamizh Sangam at Alagappa University, Karaikudi, on 17-08-2024.
	Conference patron for the 10 th National Conference on “Agro Ecological Farming System to promote Sustainable Agriculture” at Pushkaram College of Agricultural Sciences, Pudukkottai.
	Chief Guest in the valedictory function of “International Conference on Precision Horticulture–ICPH 2024” at HC & RI, TNAU, Periyakulam.
	“Enduring Impact in Plant Pathology award” in the International Conference on Precision Horticulture-ICPM-2024 during 22-24 th August, 2024.
	Chief Guest, First Year Students’ Orientation Programme, SRM Institute of Science & Technology, Tiruchirappalli, on 01.08.2024
	Chief Guest in the “U Genius 3.0 National Level General awareness quiz competition 2024” organized by Union Bank of India.
	Honored as Guest of Honor in the “International Conference on Plant Protection in Horticulture–Advance and Challenges” (ICPPH-2024).
Dr. M. Loganathan	Obtained Tamil Nadu Government license for production of Kaveri Microbial Consortium
Dr. K. Nagendran	Best Oral Presentation Award at the International Conference on Plant Protection in Horticulture (ICPPH-2024), organized by IIHR, Bangalore.
Dr. A. Mohanasundaram	Best Oral Presentation Award at the National Conference on Agro-Ecological Farming System to Promote Sustainable Agriculture held on 11 th August 2024 at Pudukkottai

TN Government licence for production of KMC

Personalia

Transfer

Dr. R. Saranya, Scientist (Plant Pathology), joined ICAR–NRCB, Tiruchirappalli (w.e.f. 11.07.2024), on transfer from ICAR–Central Arid Zone Research Institute (CAZRI), RRS, Jaisalmer.

Appointment

Ms. Akansha Kumari joined the Centre on 02.09.2024 as ‘Assistant’ (Direct Recruitment).









Kalpatharu: Banana for Health and Wealth

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-  <https://www.facebook.com/people/ICAR-Nrcb>
-  <https://x.com/ICARNrcb>
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