

Banana Bites

Volume 28 (2)

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Contents

Title	Page No.
1. Major Research Highlights	1
2. Transfer of Technology (ToT)	3
3. Outreach and Extension	4
4. Other Informations	6

Produced & Published by

Director, ICAR-NRCB

Editors

Dr. C. Karpagam

Dr. J. Poorani

Dr. R. Selvarajan

Technical Assistance

Dr. P. Ravichamy

Mr. S. Harishwar

Dr. R. Arthee

Layout Design

Mr. S. Ajith Kumar

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From the Director

I am pleased to present the newsletter for the quarter April 2024–June 2024 to our valued readers. This newsletter offers a comprehensive overview of the activities at ICAR-NRCB, spanning research, outreach, and other key areas.



In the research arena, this period has been particularly productive for ICAR-NRCB, with significant findings. Study on the effect of gallic acid on *in vitro* immunization indicated that gallic acid negatively impacted *in vitro* rooting and concentrations beyond 0.05% were lethal causing a significant reduction in per cent survival.

The Centre has been working on biofilms as smart packaging is gaining importance in food industry due to its ability to enhance food safety, improve shelf life, and reduce waste. Highly pH-sensitive and stable active films with potential use in smart packaging have been developed by the Post-harvest Technology unit by the integration of banana bract anthocyanin with banana-modified starch. Additionally, a process has been standardized for preparing probiotic fruit pudding.

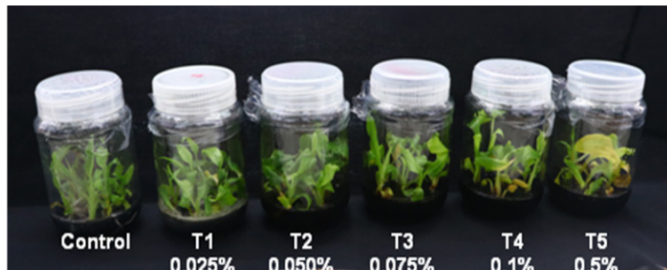
In Plant protection research, significant milestones have been achieved in the fields of entomology, pathology, and nematology. Banana Weevil Killer® (*Beauveria bassiana* ICAR-NRCB Bb EPF 22) was found to be more effective than the commercial formulation.

The center organized numerous outreach and inter-institutional activities during April–June 2024, including 31 capacity development programs that reached 2,801 beneficiaries, four national-level farmers' melas/exhibitions, and 25 news stories were posted on various social media platforms. This report stands as a testament to the collective efforts of all our staff members. I extend my thanks to the editorial committee members for their diligent work in documenting all the events in this newsletter.

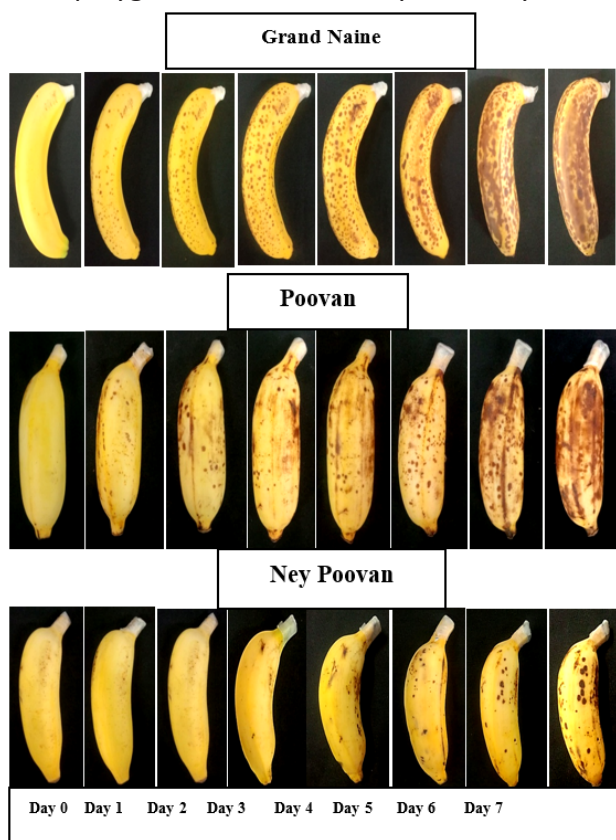

(R. Selvarajan)
Director

1. Major Research Highlights

- A study on the effect of gallic acid on *in vitro* immunization indicated that gallic acid negatively impacted *in vitro* rooting, and concentrations beyond 0.05% were lethal causing a significant reduction in per cent survival.



- Two Farmers' varieties, namely, Numaran and Manoranjitham, have been successfully registered with PPV&FRA, New Delhi and certificates received.
- Studies on the initiation and development of senescent spots in bananas revealed that Grand Naine and Poovan banana fingers showed senescent spot initiation on the first or second day, whereas Ney Poovan began showing senescent spots on the fourth or fifth day. Polygalacturonase and pectin methyl esterase activity increased at the onset of senescent spot initiation, with Grand Naine and Poovan exhibiting higher polygalacturonase activity than Ney Poovan.



- In Post-harvest research, smart intelligent packaging is gaining more traction in food applications due to its ability to enhance food safety, improve shelf life, and reduce waste. The integration of banana bract anthocyanin (BBA) with banana-modified starch (BMS), chitosan, PVA, and glycerol has produced highly pH-sensitive and stable active films that serve as visual indicators of the freshness of products like chicken meat and pH-sensitive horticultural produce.
- A method for preparing probiotic fruit pudding was also explored, introducing a standardized process that addresses the inherent challenges of incorporating probiotics into fruit pudding.
- Further research efforts were initiated to develop a functional food product by incorporating banana peel powder (BPP). BPP was added in different ratios of 2%, 4%, 6%, and 8%, and muffins were prepared.
- The development of gluten-free rice bread, focusing on the nutritional, textural, and sensory properties of bread made from a blend of unripe banana flour and various starches, including banana starch, corn starch, and modified banana starch, showed considerable promise in starch bread formulations.
- Spodoptera exigua* (Hubner) was recorded as a major pest of all major commercial cultivars of banana in the Trichy district of Tamil Nadu for the first time, as opposed to *S. litura*, a common pest of banana. A simple method to separate the pupae of *S. exigua* and *S. litura* was devised. Outbreaks of *S. exigua* on banana, onion, and tapioca were also recorded in nearby localities, indicating its potential to become a serious threat to banana cultivation.
- Banana Weevil Killer® (*Beauveria bassiana* ICAR-NRCB Bb EPF 22) was compared with a commercial *B. bassiana* formulation at six different dosages against pseudostem weevil. Banana Weevil Killer® achieved 100% mortality of the pseudostem weevil at all six dosages compared, whereas commercial formulation showed a mortality range of 24–76% (Fig. 1).

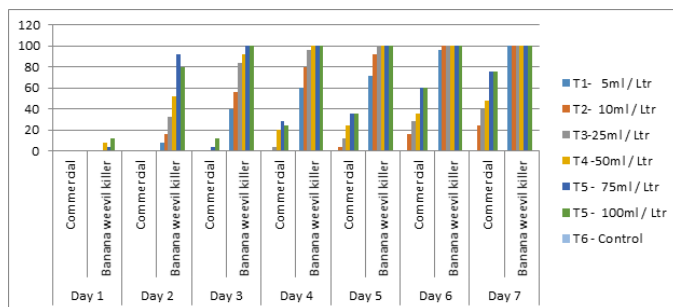


Fig. 1. Comparison of ICAR-NRCB *Beauveria bassiana* with commercial formulation

Orientation response of banana pseudostem weevil populations to the identified semiochemical compound tetradecenoic acid (10%) was studied over 15 minutes using a “Y” tube olfactometer. It was found that 53% of female and 33% of male pseudostem weevils moved towards tetradecenoic acid, while 17% of females and 20% of males moved towards the solvent (methanol). Additionally, 30% of females and 47% of males did not move in any direction (Fig. 3).

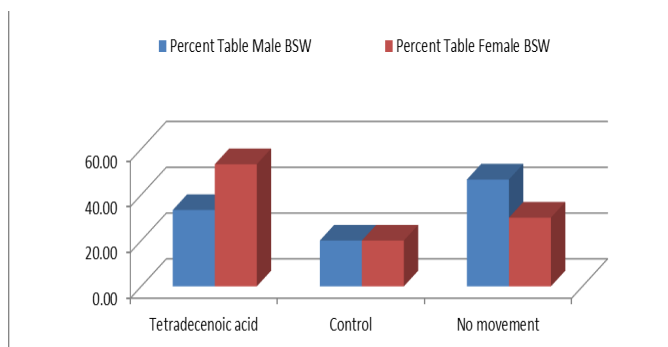


Fig. 3. Orientation response of pseudostem weevil

- Severe infection by root knot nematodes, *Meloidogyne sp.* (1264 nematodes/g root), was observed on cv. Poovan grown under ratoon cultivation for leaf purposes in Vadugakudi, Thanjavur District, Tamil Nadu. An abundant soil population of spiral nematodes, *Helicotylenchus sp.* (1-13.5 nematodes/ml soil), was observed on cv. Grand Nain grown under ratoon cultivation in Erasakkanaickanur, Theni District, Tamil Nadu. Sampling of Musa germplasm at the NRCB farm showed root lesion nematode (*Pratylenchus coffeae*) infection on Karibontha, Sanna Chenkadali, Pidimonthan, Tongat, Pagalapahad wild I, Manjeri Nendran, Karibale, Kanai Bansi, and Borchampa.
- Incidence of root galls and root knot nematode (*Meloidogyne sp.*) infection was observed on nine *Musa* genotypes, viz. Bhatmanohar, Nendra Kunnan, Mysorebale, Athiakol, Poovilla chundan, Safed velchi, Agniswar, Somai and Valliyakunnan.



Athiakol (BB - 0011) 150 n ematodes / g root



Bhatmanohar (AAB - 0075) 195 nematodes / g root



Popoulou (AAB) 21 nematodes / g root



Cv. Poovan 1265 nematodes / g root

- Banana bract mosaic virus has been documented and characterized for the first time from Andaman and Nicobar Is. on the cv. Korangi. Based on the characterization of coat protein, HC-Pro and VPg region, isolate was found to be distinct compared to the previously documented BBrMV genome from India.



2. Transfer of Technologies (ToT)

S. No	Date	Technology	Technology Purchaser	Revenue
1.	16.04.2024	Dehydrated / fortified / flavoured ripe banana fig	M/s. Puthuvazhvu Banana Farmers Producer Company Limited, 38-154, Chenbagathopuvila, Thickurichy, Kanyakumari - 629168.	25000.00
2.	10-11.06.2024	Fortified Basil Seed Suspended Banana Juice	Mr. Yash Vyas M/s. 3D Nutrients Pushpak 22 Mitra Niwas road opposite Geeta Mandir Ratlam, Madhya Pradesh-457001	25000.00
3.	10-11.07.2024	Process for making banana grits/suji and flakes	Mrs. J. Jeevika Shree 1/446, Andikadu, Palladam Panickkampatti, Tiruppur - 641664.	25000.00



M/s. Puthuvazhvu Banana Farmers Producer Company Limited, Kanyakumari



M/s. 3D Nutrients, Ratlam, Madhya Pradesh



Mrs. J. Jeevika Shree, Tiruppur

3. Outreach & Extension

Capacity Development Programmes

S. No	Particulars	No. of programmes/ groups	No. of beneficiaries
1	On-campus one day capacity development programme for farmers	1	40
2	Off-campus one day capacity development programme for farmers	5	1300
3	One day capacity development programme for students	26	1421
Total		27	2801



On-campus training programme for farmers and students

Transfer of Technology through frontline exhibition activities

S. No	Date	Title	Organizer(s) & Venue	No. of Visitors
1	14.05.2024	Workshop on “Hi tech Banana Cultivation”	NRCB & ISHA at Annur, Coimbatore, Tamil Nadu	400
2	15.05.2024	Workshop on “Hi tech Banana Cultivation”	NRCB & ISHA at Karamadai, Coimbatore, TN	350
3	31.05.2024-02.06.2024	Triphal Diversity Show-2024 (Mango, Jackfruit, Banana)	Organized by IIHR & NRCB at IIHR, Bangalore, Karnataka	15,000
4	23.06.2024	Cultivation of Food Forest and Triphal Diversity Show-2024	NRCB & ISHA at Pushkaram COA, Pudukkottai, TN	5,000
Total				30,750



Workshop at Annur, Coimbatore



Workshop at Karamadai, Coimbatore



Triphal Diversity Show-2024



Cultivation of Food Forest and Triphal Diversity Show- 2024

Transfer of technologies through print and electronic media

S. No	Particulars	Nos.
1	News stories	4
2	Press meets & Phone communications	8
3	News items published in print media	2
4	News stories published in electronic media (AIR &TV)	4
5	News published in social media	7
6	News stories reported in ICAR – NEWS (Online)	2

Other significant outreach programmes

Series of training programmes for FPO farmers of ISHA outreach

ICAR-National Research Centre for Banana, Tiruchirappalli, Tamil Nadu, and ISHA Outreach jointly organized a series of training programs on “Integrated Cultivation of Banana” for the FPO farmers of ISHA Outreach. A training program was held for Manneeswarar and Chennai Andavar FPOs

of Annur block on 14th May 2024. On 15th May, the training was extended to FPO members of Karamadai FPO in Karamadai block. Approximately 550 FPO members were trained with the two programs. Additionally, hand-holding support and business plans were discussed for the benefit of all the FPOs in the region. An exhibition was also part of the event, showcasing various banana varieties, value-added products, and NRCB technologies.



ICAR-NRCB co-organized the Triphal Diversity Show

ICAR-National Research Centre for Banana, Tiruchirappalli, Tamil Nadu, and ICAR-IIHR, Bengaluru, jointly organized the Triphal

Diversity Show 2024. The event, held at ICAR-IIHR, Hesaraghatta, Bengaluru, from May 31 to June 2, 2024, showcased the diversity of mango, jackfruit, and banana varieties. The show attracted over 15,000 visitors and reached more than 20,000 enthusiasts through social media. ICAR-NRCB

showcased around 120 distinct banana varieties including GI-tagged bananas with unique traits such as high carotenoids, minerals, iron, resistant starch, medicinal properties, and distinct flavors.



ICAR-NRCB and ISHA outreach (Kaveri Calling) jointly organized “Cultivation of Food Forest and Triphal Diversity Show”

ICAR institutes, including the National Research Centre for Banana (NRCB), IIHR, and CTCRI, partnered with Isha Outreach to host the “Cultivation of Food Forest and Triphal Diversity Show 2024.” The event took place at Pushkaram Agricultural College, Thiruvarangulam, Pudukkottai, on June 23, 2024. It showcased the diversity of mango, jackfruit, and banana varieties, drawing over 5,000 farmers and other stakeholders, and reaching over 10,000 through social media, with extensive media coverage. ICAR-NRCB presented various technologies beneficial to farmers, stakeholders, and entrepreneurs.



4. Other Information

ICAR-NRCB organized a series of Internship Training Programmes

Dr. C. Karpagam and Dr. A. Mohanasundaram organized a series of Comprehensive Internship Training Programmes on Banana Improvement, Production, Protection, Post-Harvest Technology & Extension from June 24 to 28, 2024 to B.Sc. (Agriculture) students from VIT, Vellore, and KIT, Coimbatore.



Dr. Prabhu Govindasamy and Dr. K. Nagendran organized 30-day internship program on “Recent Advances in Biochemical and Biotechnological Techniques in Banana” during 20th May–19th June, 2024. Totally 32 PG Students from Avinashilingam University, Coimbatore, Dr. NGP. Arts and Science College, Coimbatore, PSG College of Arts and Science, Coimbatore, Ethiraj College for Women, Chennai, Muthayammal College of Arts and Science, Rasipuram, and Bishop Heber College, Tiruchirappalli participated.



Dr. A. Mohanasundaram and Dr. M. Mayilvaganan organized an Internship Training Program for M.Sc. students (Zoology) from Bharathiar University, Coimbatore, on “Entomological, Nematological, and Pathological Techniques in Banana” from May 13 to 27, 2024, at ICAR-NRCB, Trichy.



Distribution of the certificate for the trainee

10th International Day of Yoga

The 10th International Day of Yoga was observed at ICAR-NRCB. On this occasion, special guest Dr. R. Sugumar from Shri Jayarangha Nature Cure Hospital, Trichy, created awareness about Yoga, which establishes harmony between body and mind, leading to a happy, healthy, and stress-free life.



World IP Day

During the celebration, Mrs. Bimi G.B., Deputy Controller of Patents, Chennai, explained the processes for national and international patent filing, with special emphasis on the Patent Cooperation Treaty (PCT) and its requirements. She also detailed the procedural aspects of the PCT system, elucidating its fundamental principles and operational mechanisms. Dr. R. Selvarajan, Director, discussed IPR at ICAR and ICAR-NRCB, highlighting the need for a speedy IPR process, an effective system, and the importance of IP-oriented research.



Visit of Central Compliance Committee (CCC)

To monitor the Event Selection Trials (EST) of GE banana lines under confined field conditions, the Central Compliance Committee (CCC) of RCGM, headed by Dr. S.N. Sudhakar Babu and including members Drs. S.J. Rahman, Lokesh Naroliya, and Abhilasha Singh Mathuriya, visited the EST trials of PVA and iron at ICAR-NRCB on April 5, 2024.



NRCB's participation in Banana Breeder's interactive meeting in Guadeloupe

ICAR-NRCB Scientist Dr. M. S. Saraswathi participated in the Banana Breeders Interactive Meeting held at CIRAD, Guadeloupe, and Alliance of Bioversity International – CIAT, Montpellier, France, from April 16 to 20, 2024.



Cirad 925



Cirad 931



Cirad 938



Cirad 924



Cirad 964



Cirad 965



Cirad 966

Potential hybrids of CIRAD

XXVII IRC meeting

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



Participation in workshop/Training/Seminar/Conference/meetings

Name of the Staff	Name of the event	Venue	Date
Dr. R. Selvarajan	Review Meeting of SMDs		05.04.2024
	Role & Importance of Secondary Agriculture		08.04.2024
	Ecoregional Working Group Programme		12.04.2024
	MIDH-NHM State Level Executive Committee Meeting	Secretariat, Chennai	07.05.2024
	Visit to TC Facility	EID Parry, Karur	20.05.2024
	Plant Pathology Expert in State Level Technical Programme (SLTP) Meeting of Plant pathology for 2024 organized by RARS, ANGRAU, Lam, Guntur	virtual mode	21.05.2024-23.05.2024
	National Conference on the Paradigm and Dynamics of Digital Horticulture for Food, Nutrition, and Entrepreneurship	JAU, Junagadh, Gujarat.	28.05.2024-31.05.2024
	Guest of Honour in Triphal Diversity Show	ICAR-IIHR, Bengaluru	31.05.2024-02.06.2024
	ICAR- AUs Interaction meeting		01.06.2024
	Signed an MoU with Govt. of Madhya Pradesh, Bhopal	Secretariat, Govt. of Madhya Pradesh, Bhopal	06.06.2024
	Guest of Honour in a Workshop cum Training for Agri engineers working in KVKs of Madhya Pradesh and Chattisgarh		
	National Symposium on “Transforming IARI into a global leader in Agricultural Research and Education”	ICAR-IARI, New Delhi.	22.06.2024
	Cultivation of Food Forest and Triphal Diversity Show	Pushkaram Agricultural College, Pudukkottai	23.06.2024
	External Expert in the Selection Committee for recruitment of Teaching staff	Arul Anandar College (Autonomous), Karumathur, Madurai	
	Field survey with the NePPA Team at experimental field	Theni	26.06.2024-27.06.2024

R. Selvarajan M. Mayil vaganan S. Backiyarani M.S. Saraswathi C. Anuradha K. Nagendran	16 th IBSC meeting	ICAR-NRCB, Trichy	12.04.2024
R. Selvarajan M. Mayil vaganan S. Backiyarani	CCC visit meeting on EST trial	ICAR-NRCB, Trichy	04.05.24
M. Mayil vaganan	One-month internship training for the students of Avinashilingam University Dr. NGP Arts and Science College, and Bishop Heber College.	ICAR-NRCB, Trichy	
	Fifteen days internship training for students from Nehru Arts & Science College, Muthayammal College, Bharathidasan University, Ethiraj College for Women and KIT	ICAR-NRCB, Trichy	
	Fifteen days internship training for students from Bharathiar University, Coimbatore.	ICAR-NRCB, Trichy	
	One-week internship training for students from School of Agricultural Innovations & Advanced Learning (VAIAL) VIT.	ICAR-NRCB, Trichy	
K.N Shiva C. Karpagam Pramod S. Shelake	Triphal Diversity Show- 2024	ICAR-IIHR, Bengaluru	31.05.2024- 02.06.2024
K.N Shiva C. Karpagam A. Mohanasundaram	Workshop on “Hi-Tech Banana Cultivation” jointly organized by ICAR-NRCB and Isha Outreach	Annur and Karamadai	14.05.2024- 15.05.2024
C. Karpagam	Organizing secretary for Triphal Diversity Show 2024	ICAR-IIHR, Bengaluru	
	Assessment Committee Meeting of Technical Personnel	ICAR- IISR, Kozhikode, Kerala	22.05.2024
M. S. Saraswathi	Expert for the Scientific writing workshop		28.05.2024
	Expert for the Scientific writing workshop		25.06.2024
	Co-ordinated the 10th International Yoga Day	ICAR-NRCB, Trichy	
M. Loganathan	Internship Training programme on “Microbes in pest management” for students from Bharathidasan University		
P. Suresh Kumar	Capacity building program on “Building Successful Incubation Ecosystem” organized by ABI	ICAR- NAARM, Hyderabad.	03.07.2024- 05.07.2024
V. Kumar	‘Banana Breeding Network’ program meeting		25.04.2024
	Organized a training to Dr. Niranjan Chinara (Pl. Pathologist), OUAT, Bhubaneshwar on ‘Advanced Production Technologies and Integrated Management of Pest and Diseases in Banana’	ICAR-NRCB, Trichy	25.06.2024- 28.06.2024
K. Nagendran	Training Programme on “ LQMS and Internal Audit as per IS/ISO/IEC 17025:2017”	Bureau of Indian Standards, Southern Regional Office, Chennai	14.05.2024- 17.05.2024



Education (Students, Guest lectures/ speakers)

Name of the Scientist	Details
R. Selvarajan	Delivered Keynote lecture on “Advances in Precision Production and Utilization of Banana Using Digital Technology” in National Conference on the Paradigm and Dynamics of Digital Horticulture for Food, Nutrition, and Entrepreneurship from May 28th to May 31st, 2024, at JAU, Junagadh, Gujarat.
C. Karpagam	- Lecture on “Precision Farming in Banana, Domestic market and export potential”- for MANAGE training programme on 21.06.24. - Lecture in Internship program on “Comprehensive Training on Banana Improvement, production, protection, post-harvest technology and extension” on 26.06.24
M. Mayilvaganan	Two students guided for project works – D. Logavarthini, M. Sc. (Biochemistry), and S. Shruthi, M. Sc. (Biochemistry), Bharathidasan University, Tiruchirappalli
S. Backiyarani	- Lecture on “Banana breeding is no more recalcitrant-an Update” on 26.7.24 at TNAU, Coimbatore - Lecture on “Improvement of vegetatively propagated crops – A case study in banana” at HC&RI, Coimbatore - Mentor for Sneha N (2020012036) IV B.Tech (Biotechnology), TNAU, - External examiner for Ph.D. viva voce at HC&RI, Coimbatore and TNAU, Coimbatore on 26.7.24 and 28.6.24
A. Mohanasundaram	- Guided three M.Sc. students from A.V.C. College (Autonomous), Mayiladuthurai - Three lectures for M.Sc. Zoology students, from May 21 to 24, 2024 - Lecture for M.Sc. students (Biochemistry & Biotechnology), on June 1, 2024 - Lecture for M.Sc. Microbiology students, from June 12 to 13, 2024 - Radio talk entitled “Integrated Pest Management in Banana Cultivation” - Lecture during Workshop on “Hi-Tech Banana Cultivation” on 14-15th May, 2024.
G. Prabhu	Lectures delivered in: - Internship program on “Comprehensive Training on Banana Improvement, production, protection, post-harvest technology and extension” on 26.06.24. - Internship program on “Entomological, Nematological, and Pathological Techniques in Banana” on 27.05.24. - Internship program on “Banana processing technologies and by-product utilization” on 5.07.24. - Scientific writing workshop held at AC&RI, Madurai on 16-05-2024. - Scientific writing workshop held at AC&RI, Trichy on 24-06-2024. 6. “Precision Farming in Banana, Domestic market and export potential”- Online training on Banana crop, MANAGE, Hyderabad, on 19.06.24.
K. N. Shiva	- Lecture on Value added products during Workshop on “Hi-Tech Banana Cultivation” on 14-15th May, 2024. - Lecture on Value Addition in Banana during Internship programme. on 3rd June 2024. - Lecture on Post-Harvest Technology and Export of banana during internship programme on 24th June

Dr. P. Suresh Kumar	• Co-Chairman for Ph.D. student of College of Horticulture, Anantharajupeta, Annamayya (Dist.). DYSRHU Horticultural University. • Co-Chairman for M.Sc. student from PGP College of Arts and Science, Namakkal. • Co-Chairman for M.Sc. student PGP College of Arts and Science, Namakkal. • Lecture on Value addition in Agro-Products (Fruits) in AGRI INTEK 2024. • Lecture on “Novel food processing technologies and entrepreneurship development” at Lovely University, 3rd May 2024 • Workshop on scientific research paper writing, 28-30 May 2024 • Creation of circular economy, VIT students. 27 June 2024
M.S. Saraswathi	• Internship training, Practical Session on 22.05.2024 • Internship Practical Session on 23.05.2024. • Internship training lecture for VIT students on 24.06.2024.
P. Giribabu	• Internship training lecture on 13 June 2024. • Internship training lecture on 26 June, 2024.
M. Loganathan	Guided two M.Sc. (Microbiology) students from Department of Microbiology, AVC College (Autonomous), Mannampandal, Mayiladuthurai
K. Nagendran	Guided three MSc (Botany) students from Department of Botany, Bharathidasan University, Tiruchirappalli

Publications

Research Papers

Backiyarani S, Uma S, Agarwak DK, Durai P, Thangavelu R, Giribabu P, Anuradha, C, Padmanaban B, Periyannayagaraj SE, Saraswathi, MS 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.

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Thangavelu R, Suresh Kumar P, Shuprajhaa T, Varun G, 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: 113292. <https://doi.org/10.1016/j.scientia.2024.113292>.

Violet Akech, Therése Bengtsson, Rodomiro Ortiz, Rony Swennen, Brigitte Uwimana, Claudia F Ferreira, Delphine Amah, Edson P Amorim, Elizabeth Blisset, Ines Van den Houwe, Ivan K Arinaitwe, Liana Nice, Priver Bwesigye, Steve Tanksley, Subbaraya Uma, Backiyarani Suthanthiram, Marimuthu S Saraswathi, Hassan Mduma, Allan Brown. (2024). Genetic diversity and population structure in banana (*Musa* spp.) breeding germplasm. *The Plant Genome*. <https://doi.org/10.1002/tpg2.20497>.

Accolades

Dr. R. Thangavelu	NAAS Fellowship awarded on 5 th June 2024 by National Academy of Agricultural Sciences, New Delhi, India
Dr. P. Suresh Kumar	NAAS Fellowship awarded on 5 th June 2024 by National Academy of Agricultural Sciences, New Delhi, India



Personalia

Promotions

- Dr. P. Durai was promoted from the grade of Assistant Chief Technical Officer (T-7/8) to the grade of Chief Technical Officer (T-9) w.e.f. 03.04.2023
- Mrs. C. Sagayam Jacqueline was promoted from the grade of Senior Technical Officer (T-6) to the grade of Assistant Chief Technical Officer (T-7/8) w.e.f. 01.01.2023
- Mr. R. Pitchaimuthu was promoted from the grade of Technical Officer (T-5) to the grade of Senior Technical Officer (T-6)
- Mr. N. Marimuthu was promoted from the grade of Technical Officer (T-5) to the grade of Senior Technical Officer (T-6)

Retirement

- Dr. S. Uma superannuated from the post of Principal Scientist in the afternoon of 31.05.2024.
- Mrs. S. Durgavathy superannuated from the post of Assistant in the afternoon of 31.05.2024.
- Mr. R. Kandamani superannuated from the post of Administrative Officer in the afternoon of 28.06.2024





Kalpatharu: Banana for Health and Wealth

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Contact Us

ICAR - NATIONAL RESEARCH CENTRE FOR BANANA

Thogamalai Road, Thayanur Post, Tiruchirappalli - 620 102, Tamil Nadu, India



0431-2618125



director.nrcb@icar.gov.in



<https://nrcb.icar.gov.in>



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