



NABS *News Letter*

National Academy of Biological Sciences

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Former Chairperson, NBA, GOI, Chennai

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From the Desk of President.....



Dear NABSians,

Greetings from NABS.

At the outset, let me extend my warm greetings and New Year wishes to all the fellow members of National Academy of Biological Sciences. The pandemic has derailed many of our activities. In spite of the hardship we faced for the past two years, we managed to carry out the activities of the Academy. In particular, the First NABS International Conference (which is 12th in the series), originally proposed to be held in 2020, was successfully organized in collaboration with Faculty of Agriculture, Annamalai University, Annamalainagar in virtual mode from 26 to 28 August, 2021 at the campus of Faculty of Agriculture. I take this opportunity to thank all the members, especially, the organizing Secretary, Dr. M. Prakash and his team of dedicated colleagues for their excellent cooperation and successful conduct of the International Conference.

Hopefully, the year 2022 will be free from COVID-19 residuals and let us look forward to active and productive years ahead.

(V. A. Parthasarathy)
President, NABS

2. Message from Vice-President...



*Dear Members of NABS,
Warm New Year Greetings.*

One major challenge for the twenty first century will be the production of sufficient food for the global human population which is estimated by United Nations to reach 10 billion by 2050. If global food production is to keep pace with an increasingly growing population, the great challenge for agricultural scientists is to boost plant productivity in an environmentally sustainable manner. Sustainability refers to “Successful management of resources for agriculture to satisfy changing human needs while maintaining or enhancing the quality of the environment and conserving natural resources”. The solution lies in developing new technologies with reduced use of inputs besides maintaining a sustainable level of productivity.

Soil is a wonderful gift of nature as being the basis of terrestrial life and performs important functions like storing and cycling nutrients for plants, filtering and buffering of various organic and inorganic compounds for providing potable groundwater, harboring and sustaining biological diversity *etc.* Under the pressure of increasing food, fodder, feed, fibre and fuel production, soil has been used as medium of plant growth with considerable reliance on external supply of major nutrients, irrigation water, plant protection chemicals *etc.*, without taking care of their impact on their capacity to carry out different functions. As a result, soils of various agro-ecological zones, particularly under intensive cultivation have developed fatigue with declining factor productivity, particularly of plant nutrients.

Faulty soil management has also resulted in accelerated soil erosion, groundwater quality deterioration, emerging micronutrient deficiencies and adverse impact on soil biodiversity and physical properties, resulting in about 100 million hectares of land in our country as degraded. Thus there is an urgent need for effective soil protection and land use policy and establishment of framework for monitoring soil quality in order to save our precious soil resources from degradation. Soil is alive and harbors 25% of the earth's biodiversity. Soil biodiversity research, embracing study of biological systems in soil, plays an important role in achieving this goal. As biologists, let us contribute our best to reach this goal.

(D.J. Bagyaraj)
Vice-President

3. Message from Editor in Charge



*Dear Members of NABS,
Greetings.
My warm New Year greetings to you all.*

Natural Oil The Green Chemistry, as a Source of Novel Pesticide

Economic loss in agriculture crops is due to the attack of pests. Besides, insect pests also serve as a vector for the transmission of viral diseases. Impact of pests on the productivity also reflects on the health of human beings and livestock as well.

Traditional practices by our fore fathers have enlightened the insecticidal property of essential oils for mitigation of damages imposed by crop pests. In recent past, scientists across the Globe have invested their time on the exploration of essential oil as a green alternative for synthetic pesticide towards the management of pests affecting field crops and at postharvest level. Furthermore, they also pave the way for overcoming pesticide resistance.

During a travel inside a forest or a plantation there are some plants, which produce certain aroma, that could not be resisted by human beings. Those are due to the synthesis of natural substances which open new vistas in the synthesis of novel biomolecules with repellent and insecticidal properties. Till date, many of the aroma generated from essential oil of plant origin remained underutilized. Thus, essential oils are a good source of Green Chemistry, which deters pests and are less harmful to environment. Though essential oils have been widely used in fragrances, foods, beverages, aroma therapy and in pharma based medications, scientists have discovered in recent past that they not only have repellent action but also disrupt the central nervous system and physiological process of insect pests.

For example, oils of citronella, rosemary, cinnamon, mint and clove act as insect repellents. An in-depth knowledge on understanding the green chemistry, their mechanism will certainly aid in the discovery of novel green chemistry that could replace the conventional pesticides and repellents. Dr. Joel Coats and his team in the Department of Entomology at Iowa State University explored the potential of plant essential oils as effective alternative pesticides and insect repellent for the last two decades. They have developed, designed and assessed the efficacy of synthetic analogues of terpene bio-rational repellents, that represent a third major class effective against mosquitoes and ticks.

Similarly, it also opens new opportunities to mine the biomolecules present in the green chemistry for quenching the insect pests damaging crop plants. Advances in the field of molecular docking, simulation and *in silico* analysis will further strengthen the knowledge to discover novel green molecules from plant oils with different mode of action and to have an effective control of crop pests.

(S. Nakkeeran)
Editor, NABS NL

4. News and Events

4.1. News

4.1.3. First NABS-International Conference

- The First NABS-International conference with the theme, "Life Sciences: Contemporary Approaches in Biological Sciences for Food, Health, Nutrition Security and Conservation of Biodiversity" (12th NABS-Conference) was organized in collaboration with Faculty of Agriculture, Annamalai University, Annamalainagar, Chidambaram from 26 to 28 August, 2021 on virtual mode.

Inaugural Function

- Inaugural function was held on the FN of 26 August 2021 at Seminar Hall of Faculty of Agriculture, Annamalai University; The inaugural function began with Thamizhthai Vazhthu followed by lighting the Lamp of Love (Kuthuvilakku) by the chief guest and other dignitaries on the dais as a mark of wellness and auspicious beginning.
- The guests on the dais and delegates off the dais prayed for the wellbeing and speedy recovery of Dr. M. Anandaraj, the former Editor, NABS-Newsletter.
- Observed two minutes silence as a mark of respect to Dr. K. Natarajan, EC Member (expired on 24 January, 2021) Prof. M. Mahadevappa, former Vice Chancellor (expired on 5th March 2021) and Dr. K. Balaraman, Founder EC Member of NABS (expired on 22 May-2021) who passed away due to illness during 2021. May their soul rest in peace.
- Dr. M. Prakash, Organizing Secretary of First NABS-International Conference and Professor of Crop Physiology, Faculty of Agriculture, Annamalai University, welcomed the guests and delegates who were on and off line.
- Dr. V. A. Parthasarathy, President, National Academy of Biological Sciences, Chennai presided over the inaugural function and delivered the Presidential address.
- Prof. Dr. Balaji Swaminathan, Professor & Head, Department of ENT, Rajah Muthiah Medical College & Hospital, Syndicate Member & Member, Convener Committee, Annamalai University was the Chief Guest, who inaugurated, released the Souvenir cum Abstract book of the conference and delivered the inaugural address.
- Prof. Dr. R.R. Hanchinal, Formerly Chairperson, Protection of Plant Varieties and Farmers Rights Authority, GoI, New Delhi & Vice Chancellor, UAS-D, Karnataka was the Guest of Honor who conferred the prestigious NABS award- Prof. S. Kannaiyan Memorial Award on Dr. Sivasubramanian (for the year 2020) and Dr. P. K. Chakrabarty (for the year 2021) and offered his felicitation.
- Prof. Dr. Anil Kumar Srivastava, Member, Agricultural Scientists Recruitment Board, ICAR, New Delhi & Formerly Vice Chancellor, National Dairy Research Institute, Karnal was the Guest of Honor who conferred the



prestigious NABS award- Dr. APJ Abdul Kalam Memorial NABS-Life Time Achievement Award on Dr. Kirti Singh (for the year 2019) and Dr. Palpu Pushpangadan (for the year 2020) and offered his felicitation

- Dr. T. Marimuthu, Secretary, NABS released the CD version of Souvenir cum Abstract book of the conference.
- Dr. Kirti Singh, Dr. APJ Abdul Kalam Memorial NABS-Life Time Achievement Award laureate and President of International Society for Noni Science, Chennai;
- Dr. M. Ganapathy, Dean, Faculty of Agriculture, Annamalai University offered their felicitations.
- Dr. D.J. Bagyaraj, Vice President, National Academy of Biological Sciences, Chennai gave an overview of NABS activities.
- Dr. S. Arivudainambi, Director-IQAC & Professor & Head, Department of Agricultural Entomology, Faculty of Agriculture, Annamalai University gave an overview of the First NABS-International Conference
- Dr. S. Ramesh Kumar, Professor, Department of Horticulture, Faculty of Agriculture, Annamalai University proposed vote of thanks
- The inaugural function was concluded with National Anthem



Technical Sessions

Day-1: 26-08-2021

Prof. S. Kannaiyan Memorial Oration-1

Chair : **Dr. V.A. Parthasarathy**, President, NABS

Co-Chair : **Dr. N. Thajuddin**, EC Member of NABS & Professor of Microbiology, Bharathidasan University, Tiruchirappalli, Tamil Nadu

Topic : Micro algae technology for industrial effluent treatment and restoration of polluted water bodies

Oration by : **Dr. V. Sivasubramanian**, SK Memorial Laureate (2020) & Director, Phycospectrum Environmental Research Centre (PERC), Chennai, India (delivered the Oration on virtual mode)

Prof. S. Kannaiyan Memorial Oration-2

Chair : **Dr. D. J. Bagyaraj**, Vice President, NABS

Co-Chair : **Dr. N. Mathivanan**, EC Member, NABS & Director, CAS Botany & Registrar i/c, University of Madras, Chennai

Topic : Plant Health Management for Food Security: Need for Advanced Research and Enabling Policies

Oration by : **Dr. P. K. Chakrabarty**, SK Memorial Laureate (2021) & Member (Plant Sciences) Agricultural Scientists' Recruitment Board, DARE, Ministry of Agriculture and Farmer's Welfare, GOI, New Delhi, (delivered the Oration on virtual mode).

Concurrent Technical Sessions

Agricultural Sciences-1

Chair : **Dr. S. Thirumeni**, Professor, Pandit Jawaharlal Nehru College of Agriculture & Research Institute, Karaikal, Puducherry, India

Co-Chair : **Dr. M. Venkatesan**, Annamalai University

Convener : **Dr. S. Suganthi**, Annamalai University

Lead Papers :

1. **Dr. Srinivasan Ramasamy**, Flagship Program Leader for Safe and Sustainable Value Chains, World Vegetable Center, Taiwan Topic: Sustainable vegetable production for health and prosperity in the post Covid-19 era.
2. **Dr. S. Thirumeni**, Professor, Pandit Jawaharlal Nehru College of Agriculture & Research Institute, Karaikal, Puducherry (U.T), India
Topic : Introgression of qSSISFH-8.1 (R'Saltol) locus in rice through Marker Assisted Backcrossing (MABC) for improving reproductive stage salt tolerance
3. **Dr. Viswanathan Chinnusamy**, Principal Scientist & Head i/c, ICAR-Indian Agricultural Research Institute, New Delhi, India
Topic : Deciphering the functions of DST and FTA genes in abiotic stress tolerant rice by using CRISPR-Cas9 genome editing
4. **Dr. M. Pandiyan**, Professor, Agricultural College and Research Institute, TNAU, Vazhavaachanur, Tiruvannamalai, Tamilnadu, India
Topic: Mung bean(Vigna radiata (L.) Wilczek) as an ancestral source for several Vigna species conferred through crossability percentage and expression of morphological markers

Oral Presentations

In all 8 oral presentations were made during this session. The best oral presentation made were also awarded.

Poster Presentations

Chair : **Dr. R. Gomathi**, Sugarcane Breeding Institute (ICAR), Coimbatore

Co-Chair : **Dr. J. Gokulakrishnan**, Annamalai University

Convener : **Dr. R. Anandan**, Annamalai University

In all 59 posters were presented during the session. The best poster presentation made were also awarded.

Climate Change & Biodiversity

Chair : Dr. Chenna Reddy Aswath, EC Member of NABS & Principal Scientist & Head Division of Floriculture & Medicinal Crops, ICAR Indian Institute of Horticultural Research, Bangalore

Co-Chair : Dr. S. Babu, Annamalai University

Convener : Dr. R. Jayasankar, Annamalai University

Lead Papers :

1. **Dr. Dilip Kumar Jha**, Professor of Aquaculture and Aquatic Resources Management, Faculty of Animal Science, Veterinary Science and Fisheries, Agriculture and Forestry University, Rampur, Chitwan, Nepal
Topic: Implications of climate change on fisheries and aquaculture
2. **Dr. N. V. Naidu**, Director of Research (Retd.), Acharya N.G. Ranga Agricultural University
Topic: The need for biodiversity conservation for sustainable food production, livelihood and food security in the era of climate change
3. **Dr. H. Vijayaraghavan**, Dean, Adhiyaman College of Agriculture and Research (affiliated to TNAU), Krishnagiri, Tamil nadu, India
Topic: Impact of global warming and climate change: Future perspectives on agricultural ecosystems - A mini survey
4. **Dr. U. Surendran**, Senior Scientist & Head i/c Land and Water Management Research Group Centre for Water Resources Development and Management, Kozhikode, Kerala

Topic : Water and Nutrient Management Strategies for climate resilient agriculture

Oral Presentations

In all 4 oral presentations were made during the session. The best oral presentations made were also awarded.

Poster Presentations

Chair : **Dr. N. V. Naidu**, Director of Research (Retd.), ANGRAU

Co-Chair : **Dr. Raj Praveen**, Annamalai University

Convener : **Dr. J. Padmanaban**, Annamalai University

In all 6 posters were presented during the session. The best poster presentations made were also awarded.

Day-2 : 27-08-2021

Basic Sciences-1

Chair : **Dr. N.Thajuddin**, EC Member of NABS & Professor of Microbiology, Bharathidasan University, Tiruchirappalli, Tamil Nadu

Co-Chair : **Dr. P. Balabaskar**, Annamalai University

Convener : **Dr. P. Sivasakthivelan**, Annamalai University

Lead Papers :

1. **Dr. Alvin Kah-Wei Hee**, Department of Biology, Faculty of Science, Universiti Putra Malaysia, Serdang, Malaysia

Topic: Beyond chemical bonds: Unravelling the mystery of oriental fruit fly and its love potion

2. **Dr. M. Deiveeka Sundaram**, EC Member of NABS & Formerly Head, Faculty of Agriculture, Department of Agricultural Microbiology, Annamalai University, Annamalainagar, Tamil Nadu

Topic: Management of institutional wastes. A case study

3. **Dr. N.Thajuddin**, EC Member of NABS & Professor of Microbiology, Bharathidasan University, Tiruchirappalli, Tamil Nadu

Topic: Microalgae- From taxonomy to technology

4. **Dr. N. K. Krishna Kumar**, Former Deputy Director General, ICAR, New Delhi

Topic: Insect biodiversity, ecosystem services and sustainable agriculture

Oral Presentations

In all 2 oral presentations were made during the session. The best oral presentations made were also awarded.

Poster Presentations

Chair : **Dr. P. Nallathambi**, EC Member of NABS & Principal Scientist (Plant Pathology), IARI- Regional Station Wellington, Tamil Nadu

Co-Chair : **Dr. S. Thirumenti**, Professor, Pandit Jawaharlal Nehru College of Agriculture and Research Institute, Karaikal, Puducherry (U.T), India.

Convener : **Dr. R. Parthasarathi**, Annamalai University

In all 18 posters were presented during the session. The best poster presentations made were also awarded.

Agricultural Sciences-2

Chair : **Dr. Rameshkumar**, Annamalai University

Co-Chair : **Dr. CT. Sathappan**, Annamalai University

Convener : **Dr. K. Elayaraja**, Sugarcane Breeding Institute (ICAR), Coimbatore

Lead Papers :

1. **Dr. K.G. Mandal**, Director, ICAR-Mahatma Gandhi Integrated Farming Research Institute, Motihari, Bihar, India
Topic: Increasing water use efficiency in rice through efficient irrigation
2. **Dr. Sivakumar Uthandi**, Professor, Department of Agricultural Microbiology, Tamil Nadu Agricultural University, Coimbatore, India
Topic: Microbial volatile organic compounds (mVOC) induced biotic and abiotic stress responses in crop plants
3. **Dr. K. Pakeeratharan**, Head, Department of Agricultural Biology, Faculty of Agriculture, University of Jaffna, Sri Lanka.
Topic: Gel free SNP technology to characterize host plant resistance in genomics era
4. **Dr. M.K. Kalarani**, Professor & Head, Department of Crop Physiology, Tamil Nadu Agricultural University, Coimbatore
Topic: Physiological function of melatonin in plants under abiotic stress.

Oral Presentations

In all 23 oral presentations were made during the session. The best oral presentations made were also awarded.

Poster Presentations

- Chair* : **Dr. K. Balakrishnan**, Formerly Professor, TNAU
Co-Chair : **Dr. B. Sunil Kumar**, Annamalai University
Convener : **Dr. D. Dhanasekaran**, Annamalai University

In all 75 posters were presented during the session. The best poster presentations made were also awarded.

Agricultural Sciences-3 (including Social Sciences)

- Chair* : **Dr. S. Arivudainambi**, Annamalai University
Co-Chair : **Dr. G. Sathiyarayanan**, Annamalai University
Convener : **Dr. R. Kanagarajan**, Annamalai University

Lead Papers :

1. **Dr. S. Nakkeeran**, Professor of Plant Pathology, TNAU, Coimbatore
Topic: Harnessing the potential of endophytome for the management of fungal
2. **Dr. M. Mohan**, Principal Scientist, ICAR - NBAIR, Hebbal, Bengaluru, India
Topic: Genome basis of insect diversity and evolution of gene families in insects
3. **Dr. M.R. Ramasubramanian**, National Agro Foundation, Chennai, Tamil Nadu, India
Topic: Learn farming for sustainable crop productivity improvement: Experiential learning from farmers participatory trials
4. **Dr. Jayaraj Jayaraman**, Department of Life Sciences, The University of the West Indies, St. Augustine, Trinidad and Tobago
Topic: Seaweed extracts as plant biostimulants, bioelicitors and stress alleviators

Oral Presentations

In all 7 oral presentations were made during the session. The best oral presentations made were also selected.

Poster Presentations

Chair : **Dr. (Mrs.) B. Meena**, Associate Professor, Coconut Research Station (TNAU), Aliyarnagar, Pollachi, Tamil Nadu

Co-Chair : **Dr. T. Selvamuthukumar**, Annamalai University

Convener : **Dr. A. Senthil**, Tamil Nadu Agricultural University, Coimbatore

In all 36 poster presentations were made during the session. The best poster presentations made were also awarded.
Workshop on Molecular Interventions for Climate Resilient Agriculture

Chair : **Dr. M. Prakash**, Professor of Crop Physiology, Annamalai University

Speakers : **Prof. Jayaraj Jayaraman**, Department of Life Sciences, The University of The West Indies, St. Augustine, Trinidad and Tobago

Topic : Biotic Stress

1. **Dr. S. Thirumeni**, Pandit Jawaharlal Nehru College of Agriculture & Research Institute, Karaikal, Puducherry
Topic: Abiotic Stress, Health Sciences, Food & Nutrition (CS-7)

Chair : **Prof. Venkateswarlu Kanamarlapudi**, Swansea University, UK

Co-Chair : **Dr. Renu Agrawal**, Project Advisor, Out-Reach Program-CSIR-CFTRI, Mysore

Convener : **Dr. John Christy**, Annamalai University,

Lead Papers :

1. **Prof. Suresh Chandra Babu**, International Food Policy Research Institute, Washington DC, USA

Topic: Bio economy and food system transformation: Global experience from the climate change, nutrition and health nexus

2. **Dr. P.V. Vara Prasad**, Distinguished Professor and Director, Kansas State University, USA

Topic: Sustainable agricultural intensification for global food and nutrition security and enhancing climate resilience

3. **Dr. C. Anandharamakrishnan**, Director, Indian Institute of Food Processing Technology (IIFPT), Thanjavur, Tamilnadu, India

Topic: Future Foods

4. **Dr. Thilageswary Kumutharanjan**, Unit of Siddha Medicine, University of Jaffna

Topic: Efficacy of Thripala choornam and Murukam paddai Thailamon- patients with karappan noi (Exzema)

5. **Prof. Venkateswarlu Kanamarlapudi**, Swansea University, UK

Topic: Investigation of potential new treatments for diabetes, cancer and COVID-19

6. **Dr. Veda Krishnan**, Fulbright Fellow, Whistler center for Carbohydrate Research, Food Science, Purdue University, West Lafayette, Indiana

Topic: Microstructure, matrix composition, interactions, and molecular configuration share insights into ultimate inherent glycemic potential (IGP) of pearl millet (Pennisetum glaucum)

Oral Presentations & Poster Presentations

In all 5 oral and 14 poster presentations were made and the best presentations were also awarded.

Energy and Environmental Science

Chair : **Dr. K. Kathiresan**, Annamalai University

Co-Chair : **Dr. P. Sudhakar**, Annamalai University
Convener : **Dr. KR. Saravanan**, Annamalai University,

Lead Papers:

1. **Dr. K. Kathiresan**, Honorary Professor, CAS in Marine Biology, Annamalai University, Tamil Nadu, India
Topic: Mangrove forests of India
2. **Dr. N. Vigneshwaran**, ICAR-Central Institute for Research on Cotton Technology, Adenwala Road, Matunga, Mumbai, India
Topic: Agricultural Input Nanomaterials and their Environmental Impact
3. **Dr. V. Arutchelvan**, Department of Civil Engineering, Annamalai University, Annamalai Nagar, Tamil Nadu, India
Topic: Integrated waste management through symbiotic macro culture

Poster Presentations

In all 5 poster presentations were listed and 3 were presented.

Special Lectures 1 & 2 (CS-8)

Chair : **Dr. D. J. Bagyaraj**, Vice President, NABS

Co-Chair : **Dr. Chenna Reddy Aswath**, EC Member of NABS & Principal Scientist & Head, Division of Biotechnology, ICAR-Indian Institute of Horticultural Research, Bangalore, Karnataka

Speakers : **Prof. Dr. P. Pushpangadan**, Dr. A.P.J. Abdul Kalam Memorial NABS-Life Time Achievement Laureate
Amity Institute for Herbal and Biotech Products Development, Trivandrum, Kerala, India

Topic: Functional food and nutraceuticals and development of special diet for enhancing health.

1. **Dr. RS. Jayasomu**, Chief Scientist, Editor, Indian Journal of Experimental Biology (IJEB), Head, Research Journals (Biological Sciences), Head, Raw Materials, Herbarium and Museum, Delhi (RHMD); & CSIR-NIScPR, New Delhi

Topic: Analysis of research output in terms of publications on food, health, nutrition security and conservation of biodiversity

Carl Linnaeus and Prof. MSS Award Competition Session

Judging Committee

- The Chairman of the Judging committee briefed the participants about the award and protocol for presentations.

Chairman : **Dr. D. J. Bagyaraj**
Vice President, NABS
Formerly Professor & Head, Department of Agricultural Microbiology, UAS, Bangalore & Chairman, Centre for Natural Biological Resources and Community Development (CNBRCD), Bangalore

Members : **Dr. N. Mathivanan**
EC Member, NABS &
Director, CAS Botany &
Registrar i/c, University of Madras, Chennai

: **Dr. T. L. Baskaran**
Treasurer, NABS &
Formerly Professor of Plant Pathology, TNAU

- : **Dr. A. Kumar**
Division of Plant Pathology, ICAR-
Indian Agricultural Research Institute, New Delhi, India
- : **Dr. Chenna Reddy Aswath**
Principal Scientist & Head, Division of Biotechnology, ICAR-Indian Institute of Horticultural
Research, Bangalore, Karnataka

Presentation of Papers for Carl Linnaeus Award Competition

- Vanthana, M.** Induction of in planta resistance by flagellin (Flg) and elongation factor-TU (EF-Tu) of *Bacillus amylo liquefaciens* (VB7) against groundnut bud necrosis virus in tomato
Department of Plant Pathology, CPPS, TNAU, Coimbatore
- Karmel Reetha, A.** Consortium of antagonist and oil cake against tomato damping off caused by *Pythium aphanidermatum* under in vivo
Department of Plant Pathology, Faculty of Agriculture, Annamalai University, Tamil Nadu
- Priyadarshini, V. M.** Enhancing nutrient content of Bush bean (*Lablab purpureus* var. *typicus*) using Biostimulants
Department of Horticulture, Annamalai University Tamil Nadu
- Rakavi, B.** Validating the Physiological potential of Zero monopodial compact cotton TCH 1819 culture and effect on metabolomics plasticity under water deficit scenario.
Department of Crop Physiology, TNAU Coimbatore

Presentation of Papers for Prof. M.S. Swaminathan Award Competition

- Sreenayana B** Exploring the diversity of *Trichoderma koningiopsis* for the management of fungal nematode complex in cucumber under protected cultivation
Department of Plant Pathology, CPPS, TNAU, Coimbatore
- S. Kathiresan** Awareness and Adoption of Climate Resilient Recommended Farm Technologies in Rearing Livestock and Fisheries in Namakkal District of Tamil Nadu
Department of Agricultural Extension, Annamalai University, Tamil Nadu

On Day-3 (28-08-2021/ Afternoon) AGM was conducted

Common Program-All members of NABS

NABS-Annual General Body Meeting

- President : Dr. V.A. Parthasarathy
- Vice-President : Dr. D. J. Bagyaraj
- Secretary : Dr. T. Marimuthu
- Treasurer : Dr. T. L. Baskaran
- Editor : Dr. S. Nakkeeran

Organizing Secretary : Dr. M. Prakash
Organizing Secretary & EC Member of NABS

The AGM was conducted as per agenda and decisions made were ratified or approved.

Valedictory & Plenary Session

The valedictory and Plenary Session was organized on the AN of 28 August, 2021.

Dr. S. Ramesh Kumar, Professor, Department of Horticulture, Faculty of Agriculture, Annamalai University welcomed the dignitaries and delegates.

Dr. M. Ganapathy, Dean, Faculty of Agriculture, Annamalai University honored the dignitaries on the dais by offering books to them and offered felicitations.

Dr. M. Prakash, Professor & Organizing Secretary presented the recommends emanated from the deliberations of the conference which was accepted by all.

Dr. D. J. Bagyaraj, Vice President, NABS & Chairman, Centre for Natural Biological Resources and Community Development (CNBRCD) & Formerly Professor & Head, Department of Agricultural Microbiology, UAS Bangalore presided over the valedictory function and delivered presidential address.

Dr. M. Srinivasan, Dean, Faculty of Marine Sciences, Syndicate Member & Member, Convener Committee, Annamalai University presented the best oral and poster presentation awards as certificates

and cash prize, certificate and citations to the winners of Carl Linnaeus (Cash Prize: Rs.5000/-) & Prof. M.S. Swaminathan Award (Cash Prize: Rs.4000/-); delivered valedictory address as the Chief Guest of the function.

Dr. S. Arivudainambi, Director-IQAC and Professor & Head, Department of Agricultural Entomology, Faculty of Agriculture, Annamalai University thanked all the dignitaries, delegates and various committee members, students, faculties and the University authorities who ably supported organizing the International Conference. The Conference was concluded with National Anthem.

Professor Kannaiyan Memorial Award (2020 & 2021)

Prof. Dr. R.R. Hanchinal, Formerly Chairperson, Protection of Plant Varieties and Farmers Rights Authority, GoI, New Delhi & Vice Chancellor, UAS-D, Karnataka to the recipients through virtual mode.

Recipients



Dr. V. Sivasubramanian, Director, Phyto spectrum Environmental Research Centre (PERC), Annanagar, Chennai, Tamil Nadu received Prof. S. Kannaiyan Memorial Award for 2020.

Dr. P. K. Chakrabarty, Member (Plant Sciences), Agricultural Scientists Recruitment Board (ASRB), Department of Agricultural Research and Education (DARE), Ministry of Agriculture and Farmers Welfare, Government of India, New Delhi received Prof. S. Kannaiyan Memorial Award for 2021.



Dr. Abdul Kalam Memorial NABS-Life Time Achievement Award (2019 & 2020)

Prof. Dr. Anil Kumar Srivastava, Member, Agricultural Scientists Recruitment Board, ICAR, New Delhi & Formerly Vice Chancellor, National Dairy Research Institute, Karnal presented the award to the recipients through virtual mode.

Recipients



Prof. Dr. Kirti Singh, Chairperson, World Noni Research Foundation, Chennai; President, International Society for Noni Science & Formerly, Vice Chancellor, NDUAT, Faizabad; Himachal Pradesh Krishi Viswavidyalaya (HPKV), Palampur and Indira Gandhi Krishi Viswavidyalaya (IGKV), Raipur, M.P (now Chhattisgarh); Member and Chairman, Agricultural Scientists Recruitment Board (ASRB), DARE, Ministry of Agriculture, GoI, New Delhi received Dr. Abdul Kalam Memorial NABS-Life Time Achievement Award for 2019.



Prof. Dr. Palpu Pushpangadan, Padma Shri Awardee, Director General of Amity Institute for Herbal and Biotech Products Development (AIHBPD), Thiruvananthapuram and Senior Vice President, Ritnand Balved Education Foundation (RBEF), New Delhi received Dr. Abdul Kalam Memorial NABS-Life Time Achievement Award for 2020.

Carl Linnaeus Award winner

Ms. Rakavi

Validating the Physiological potential of Zero monopodial compact cotton TCH 1819 culture and effect on metabolomics plasticity under water deficit scenario

Department of Crop Physiology, Tamil Nadu Agricultural University, Coimbatore



Professor M.S. Swaminathan Award winner

Ms. B. Sreenayana

Exploring the diversity of *Trichoderma koningiopsis* for the management of fungal nematode complex in cucumber under protected cultivation

Department of Plant Pathology, Centre for Plant Protection Studies, Tamil Nadu Agricultural University, Coimbatore, Tamil Nadu



4.1.4. EC & AGM online meeting

" The 20th Executive Council Meeting and 16th Annual General Body Meeting are scheduled on 20 February 2021 via zoom platform. Members were already informed of the meeting.

5. Research Highlights

5.1. Abstract of paper presented for Carl Linnaeus Award [*Award winning paper*]

Validating the Physiological potential of Zero monopodial compact cotton TCH 1819 culture and effect on metabolomics plasticity under water deficit scenario

Cotton is the most important global cash crop and controls economy of many nations. Global sustainability of cotton yield is the major challenges for meeting impending threats under climate change and abiotic stresses. India is experiencing water scarcity since last many years. Selection of cotton cultivars which survive and give better yields in normal and water stress conditions have greater scope in India and the world over at large because of shortage of irrigation water resources. With this background, present field experiment was taken up to study the growth, physiology, and yield traits of TCH 1819 culture by different chemical

treatments and by giving drought stress. Observation on the leaf parenchymal cells distinguished the source sink relationship of the culture. By characterizing the physiological potential through manipulation by growth retardant (Mepiquat chloride (0.015%)) increased the yield by 30%. Drought stress affected the metabolites compounds by upregulating 25 metabolites in the culture and thrived under squaring stage stress. Drought stress reduced the yield by 37% in TCH 1819 at flowering stage. The results suggest that water stress during flowering stage is sensitive to TCH 1819. It can be concluded from the study that the traits identified are the potential indicators for drought tolerance in breeding programme before releasing a variety.

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5.2. Abstract of paper presented for Prof. M. S. Swaminathan Award [Award winning paper]

Exploring the diversity of *Trichoderma koningiopsis* for the management of fungal nematode complex in cucumber under protected cultivation

Cucumber is one of the most important vegetable crops grown worldwide. It is hampered by fungal nematode complex caused by *Fusarium oxysporum* f. sp. *cucumerinum* and *Meloidogyne incognita*. The present study focuses on the development of potent bio-formulation towards suppression fungal nematode complex and plant growth promotion in cucumber. *Trichoderma koningiopsis* TRI41, *T.virens* TRI37 and *T.asperellum* TRI 15 effectively inhibited mycelial growth of *F. oxysporum* f. sp. *cucumerinum* and egg hatchability and juvenile mobility of *M. incognita* *in vitro*. However, the hyperparasitic activity is evidenced under SEM. TRI41 effectively hyperparasitised and lysed the mycelium of *F.oxysporum* f. sp. *cucumerinum* and eggmass and individual egg of root knot nematode. Further, the isolate TRI 41 increased the NVOC (Nonvolatile Organic Compounds) profile at the hyper-parasitized region. The compounds such as 2,4-dihydroxy-2,5-dimethyl-3(2H)-furan-3-one; formic acid, 2-propenyl ester; 4H-pyran-4-one, 2,3-dihydro-3,5-dihydroxy-6-methyl; 5-hydroxymethylfurfural; *n*-hexadecanoic acid; octadecanoic acid and *dl*-alanine- β -naphthylamide; were identified. TRI41 efficiently colonized the rhizosphere and spermosphere region of cucumber seeds. Furthermore, TRI41 increased the root architecture of cucumber plants and increased the NVOC profile at the rhizosphere region of 35 days old cucumber seedlings. Under field conditions, seed treatment with the consortia of the isolates of *T. koningiopsis* TRI41, *T. asperellum* TRI15 and *T. asperelloides* TNAU Tad1 @ 1 ml/kg of seed (0.1%) combined with soil drenching of 100ml gel formulation in 100 liters of water over 1000 m² area of poly house on 15, 30, and 45 days after sowing indicated that the incidence of fungal nematode complex was 13.45% with the vine height of 416.31cm, 80.0 fruits/plant and with a mean yield of 15.01t/1000m².

Sreenayana B¹, Nakkeeran S¹, Muthulakshmi P² and Poornima K³

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6. Awards, Recognitions, Honors received by members of NABS

- | | |
|---------------|---|
| Renu Agrawal | <ul style="list-style-type: none"> ■ Bharat Shiksha Gaurav Puraskar award and a certificate of Education Excellence by KTK Foundation with Ministry of Corporate Affairs, GoI. |
| Thajuddin, N. | <ul style="list-style-type: none"> ■ Received D.Sc. from Periyar University, Salem for the thesis entitled, "Biodiversity and biotechnological potentials of microalgae and cyanobacteria" (public vivo voce held on 07-01-2022) ■ Admitted as a Fellow of Royal Society of Biology (London) (2022) |

- Conferred with Senior Scientist Award from Microbiologists Society of India
- Panneerselvam, A. ■ Received D.Sc. from Periyar University, Salem for the thesis entitled, "Diversity and bioprospecting of microflora in marine and terrestrial environment" (public vivo voce held on 07-01-2022)

7. Publications

a. Books

<https://link.springer.com> - G Benckiser (Ed.), 2021. Soil and Recycling Management in the Anthropocene Era. (Discusses the physicochemistry and biology of soils).

Renu Agrawal. 2021. Traditional Foods and Nutritional security. New India Publishing Agency, p. 230.

8. An appeal to contribute for Corpus Fund

Corpus Fund for Prof. S. Kannaiyan Memorial Award is being mobilized. NABS thankfully acknowledge the contributions made by members to Prof. S. Kannaiyan Memorial Corpus Fund [vide list below- continuation]

S.No.	Name of contributor	Amount (Rs.)	S.No.	Name of contributor	Amount (Rs.)
73					

We earnestly appeal to all the rest of the Life members, NABS Fellows / Associate Fellows, Corporate Life Members, Corporate Fellows, Awardees of NABS and well-wishers to contribute to this noble cause. The Fund shall be transferred on line to the Savings Account of **National Academy of Biological Sciences**

[Vide details for online transfer in item 11.1. of NL]

9. An appeal to contribute for Printing of NABS-Book

The members of NABS were requested to contribute to defray the expenses incurred on printing the book. Many members have responded. The contribution by members is listed. The contribution shall be transferred on line to the Savings Account of **National Academy of Biological Sciences**.

[vide list below-] [Vide details for online transfer in item 11.1. of NL].

S.No.	Name of contributor	Amount (Rs.)	S.No.	Name of contributor	Amount (Rs.)

Seven Deadly Sins: Wealth without work; Pleasure without conscience; Science without humanity; Knowledge without character; Politics without principle; Commerce without morality; Worship without sacrifice

- Mahatma Gandhi.



10. Enroll yourself as a member and be a part of NABS

Types of Membership available (one time payment)

A. Life Member	: ₹ 5,000/- or US\$ 200/-
b. Provisional Life Membership	: ₹ 5,000/- or US\$ 200/-
c. Corporate Life Member	: ₹ 10,000/- or US\$ 400/-
D. Corporate Fellow	: ₹ 1,00,000/- or US\$ 4000/-

- Duly filled membership form shall be sent as Secretary NABS in WORD format by E-mail to secretarynabs@gmail.com
- The prescribed membership fee shall be transferred on line

10.1. Account details of National Academy of Biological Sciences

Name of the account holder : National Academy of Biological Sciences
Account number : **10496978637**
Type of account : Savings Account
Name of Bank : State Bank of India, Valmikinagar Branch,
Thiruvanmiyur, Chennai - 600 041
Branch code / IFSC code : Branch code: 11721 - IFSC code: SBIN0011721

Down load your application from www.nabsindia.org

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On behalf of National Academy of Biological Sciences

An appeal to members of NABS

Kindly inform change of address including phone numbers and
E-mail to the Secretary, NABS by
E-mail (secretarynabs@gmail.com)

Circulated to members as E-copy on 27.01.2022