PEERS ALLEY MEDIA

Peers Alley Media
1126 59 Ave East, V5X 1Y9, Vancouver BC, Canada
WhatsApp No: +1 (506) 909-0537

WORLD CONGRESS ON

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

MARCH 31-APRIL 01, 2025

AMSTERDAM, NETHERLANDS

ADV.PSPB 2025

SCIENTIFIC PROGRAM

DAY 01
MONDAY

MARCH 31, 2025

07:45-08:20	**Registrations**
08:20-08:30	**Inaugural Ceremony**
Moderator	**Kathleen L Hefferon,** *Cornell University, USA*

Topics: Plant Genomics | Plant-Microbe Interactions | Plant Hormones | Plant Pathology | Plant Biotechnology | Plant Metabolomics | Plant Proteomics | Sustainable Agriculture | Plant Cell Signaling | Plant Physiology | Soil Plant Interactions | Plant Ecology

Session Chair	**Gunindra Nath Chattopadhyay,** *Seacom Skills University, India*

Distinguished Speaker Talks

08:30-08:50	Title: Management of Staining and Galling Associated with Black Olive Trees in Florida and the Caribbean **Ahmed Ali,** *The Davey Tree Expert Company, USA*
08:50-09:10	Title: Recovery of Native Vegetation: Opportunities for the Recovery of Brazilian Forests **Diolina Moura Silva,** *Professor, Universidade Federal do Espírito Santo, Brasil*
09:10-09:30	Title: Genomics-Enabled Dissection of Biosynthetic Machineries in Endangered Medicinal Herbs of Indian Himalayas **Rajinder Singh,** *Mahindra University, India*
09:30-09:50	Title: The Biochar as a Microbiome Carrier for Fast Soil Restoration **Mattia Terzaghi,** *University of Bari Aldo Moro, Italy*
09:50-10:10	Title: Large-Scale Gene Expression Alterations Introduced by Structural Variation Drive Morphotype Diversification in *Brassica oleracea* **Feng Cheng,** *Chinese Academy of Agricultural Sciences, China*

10:10-10:30	Title: One-Step Creation of CMS Lines using a *BoCENH3*- Based Haploid Induction System in Brassica Crop **Zhansheng Li,** *Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences, China*
GROUP PHOTO 10:30-10:35	
REFRESHMENT BREAK 10:35-10:50	
10:50-11:10	Title: Impact of Mangrove Vegetation on Sequestration of Blue-Stock Carbon in Coastal Soils **Gunindra Nath Chattopadhyay,** *Seacom Skills University, India*
11:10-11:30	Title: Impact of Biochar and Compost Amendments on Rhizosphere Microbial Diversity: A Metagenomic Perspective **Francesco Guarino,** *University of Salerno, Italy*
11:30-11:50	Title: Molecular and Phytochemical Markers Based Genetic Diversity and Population Structure Studies of *Dendrocalamus hamiltonii*, an Edible Bamboo of Manipur, North-East India **Potshangbam Nongdam Puren Meetei,** *Manipur University, India*
11:50-12:10	Title: Cloning Technology for Date Palm for Commercial Application **Sundaravelpandian Kalaipandian,** *The University of Queensland, Australia*
12:10-12:30	Title: Multifunctional Plant Virus Nanoparticles for Targeting Breast Cancer Tumors **Kathleen L Hefferon,** *Cornell University, USA*
12:30-12:50	Title: Yield Prediction Models of Organic Oil Rose Farming with Agricultural Unmanned Aerial Vehicles (UAVs) **Sinan Demir,** *Isparta University of Applied Sciences, Türkiye*
GROUP PHOTO 12:50-13:00	
LUNCH BREAK 13:00-13:30	
Session Chair	**Gunindra Nath Chattopadhyay,** *Seacom Skills University, India*
13:30-13:50	Title: Effects of Paclobutrazol on Salinity Tolerance of Bald Cypress, *Taxodium distichum* **Ahmed Ali,** *The Davey Tree Expert Company, USA*

13:50-14:10	Title: Selection of Biomarkers Responsive to Heavy Metals for the Development of Biosensors to Monitor Environmental Pollution **Alessia Postiglione,** *University of Naples "Federico II" - Monte Sant'Angelo Campus, Italy*
14:10-14:30	Title: Biomarkers from Mosses for the Creation of Biosensors of Water Environmental Health from Heavy Metal Pollution **Martina Dentato,** *University of Naples "Federico II" - Monte Sant'Angelo Campus, Italy*
14:30-14:50	Title: Chemical Components of Stevia and their Interactions with Ionizing Radiation **Nelida Lucia del Mastro,** *Institute of Nuclear and Energy Researches-IPEN/CNEN, Brazil*
14:50-15:10	Title: Environmental Regularization in Brazil: Challenges for the Advancement of Dynamic Analysis **Patricia Bourguignon Soares,** *Universidade Federal do Espírito Santo, Brasil*
15:10-15:30	Title: Microbial Reduction-Mediated Sulfur Dynamics Govern Arsenic Mobilization and Redistribution in Contaminated Soils **Muhammad Zeeshan Basheer,** *University of Chinese Academy of Sciences, China*
REFRESHMENT BREAK 15:30-15:45	
15:45-16:05	Title: Mathematical Model to Express the Protein Folding as Environment Dependent Process **Irena Roterman,** *Jagiellonian University – Medical College Krakow, Poland*
16:05-16:25	Title: Demystification of Colors in Kirlian Photography as a Clinical Diagnostic Method **Wilson Picler,** *FEEC/State University of Campinas (UNICAMP), Brazil*
16:25-16:45	Title: Photosynthetic Evaluation of *Guapira pernambucensis* (Casar.) Lundell under Different Shaded and Technological Conditions **Gabriel Rosa de Sousa,** *Universidade Federal do Espírito Santo, Brasil*
16:45-17:05	Title: Inter Species Interaction of Bradyrhizobia Affects their Colonization and Plant Growth Promotion in *Arachis hypogaea* **Dipanwita Patra,** *University of Calcutta, India*

17:05-17:25	Title: Use of Bromelia pinguin Extract Mitigates Glyphosate-Induced Toxicity in Human Cells **Luis Omar Masias Ambriz,** *Universidad Autónoma de Occidente, México*
17:25-17:45	Title: Agricultural Water Management under Water Shortage Stress Conditions: Example of Semi-Arid Konya Plain, Türkiye **Bilal Acar,** *University of Selçuk, Türkiye*
17:45-18:05	Title: Inhibiting Potential of Herbal Extracts Cocktail Against *Daboia russelli* and *Bungarus caeruleus Indian Snake Venom* **Sunil S More,** *Dayananda Sagar University, India*
18:05-18:25	Title: Plant Health—Detecting Leaf Diseases **Fandi Fatima Zahra,** *University Hassan II, Morocco*
18:25-18:45	Title: Influential Plant in Medicinal Science and Clove: Tiny Buds with Global Fame **Royanama Rahimi,** *Mashhad University of Medical Sciences, Iran*
18:45-19:05	Title: Mineral Composition of the Soil, Qualitative Features, Macro and Microelements, Amino Acid Composition of Branded Kyrgyz Rice **Smailov Eltar Ablametovich,** *International Kyrgyz-Uzbek University named after B. Sydykov, Kyrgyzstan*
19:05-19:25	Title: Ecological Significance and Biotechnological Applications of Ulva lactuca: A Comprehensive Review of this Versatile Green Macroalga **Övgü GENCER,** *Ege Üniversitesi, Türkiye*
19:25-19:45	Title: Thigmomorphogenesis in Woody Plants **Frank W. Telewski,** *Michigan State University, USA*
NETWORKING	
END OF DAY 1	

SCIENTIFIC PROGRAM

DAY 02
TUESDAY

APRIL 01, 2025

08:45-08:55	**Introduction**

Topics: Plant Genomics | Plant-Microbe Interactions | Plant Hormones | Plant Pathology | Plant Biotechnology | Plant Metabolomics | Plant Proteomics | Sustainable Agriculture | Plant Cell Signaling | Plant Physiology | Soil Plant Interactions | Plant Ecology

Distinguished Speaker Talks

08:55-09:15	Title: High Hydorstatic Pressure for the Development of Functional Bioactives from Plant Sources **Chong-Tai Kim,** *R&D Center, Ilshin T.H.E./Sokcho Bio, Republic of Korea*
09:15-09:35	Title: The Effects of Climate Change on the UAE and its Agricultural Sector **Ahmed Abdulqader Talabani,** *Shiekh Hamdan bin Rashid Al Maktoum Foundation for Medical and Educational Sciences, UAE*
09:35-09:55	Title: Hydroponic Cultivation Enhances Morpho-Physiological Traits and Quality Flower Production in Three Cultivars of French Marigold (*Tagetes Patula* L.) **Bhavya Bhargava,** *Council of Scientific and Industrial Research (CSIR), India*
09:55-10:15	Title: An Investigation of Tufa Microbialites in the Terrestrial Ecosystem of Adilcevaz (Bitlis) According to the Conservation Approach **Firat Çiltepe,** *Balıkesir University, Türkiye*
10:15-10:35	Title: Molecular Diagnosis, Characterization and Successful Development of Integrated Management Strategies for T*omato leaf Curl New Delhi Virus* (F: Geminiviridae G: Begomovirus) in Ridgegourd (*Luffa Acutangula* L.) **Mahesha B,** *ICAR-Indian Institute of Horticulture Research, India*
10:35-10:55	Title: Ethylene Mediates Dichromate-Induced Inhibition of Primary Root Growth by Altering AUX1 Expression and Auxin Accumulation in *Arabidopsis thaliana* **Abdul Wakeel Umar,** *Zhejiang University, China*
10:55-11:15	Title: Novel Sustainable Ideas, Praxis on Residential, and Green-Areas by the Henri Prost's Istanbul Development Plans **Hülya Coskun,** *Mimar Sinan Fine Arts University, Türkiye*

SCIENTIFIC PROGRAM

DAY 02
TUESDAY

APRIL 01, 2025

Exclusively for Virtual Speakers

Virtual Presentations Conducted through CISCO Webex

ADV.PSPB 2025

DAY 01

WORLD CONGRESS ON

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

AMSTERDAM, NETHERLANDS

MARCH 31-APRIL 01, 2025

SPEAKER TALKS

Management of Staining and Galling Associated with Black Olive Trees in Florida and the Caribbean

Ahmed Ali and **Manny Nassar**

Davey Institute, The Davey Tree Expert Company, USA

The Black Olive tree, *Bucida buceras* L. (Combretaceae), occurs widely in southern Florida and Caribbean urban forests. It is commonly attacked by 2 arthropod species, an eriophyid mite, *Eriophyes buceras* Cromroy (Acari: Eriophyidae), and a caterpillar, *Garella* (*Characoma*) *nilotica* (Rogenhofer) (Lepidoptera: Nolidae). Caterpillar frass and mite-induced galls cause severe staining of sidewalks, streets, and vehicles underneath the tree canopy. The staining is so aesthetically annoying that dissatisfied homeowners remove the trees, potentially reducing diversity of the urban forest flora. Studies were conducted over a 4-yr period at 2 locations to evaluate systemic insecticide treatments against these pests. In Naples, during both Y1 and Y2, trees receiving either dinotefuran soil–root drench or acephate trunk injections showed slightly reduced staining due to caterpillar suppression. During Y3 and Y4 in Coral Gables (Miami), abamectin trunk injections resulted in excellent reduction in gall formation and staining. Abamectin trunk injections were the most reliable in reducing property owner complaints and preserving the benefits of mature Black Olive trees in the urban forest. The injection technique represents an environmentally rational approach with none of the drawbacks associated with foliar applications or soil drenching.

Biography

Dr. Ali has over 40 years of experience in the Green Industry. For the past 25 years he oversaw Davey technical support programs in the USA and Canada. Currently, he is a founding team member of Davey Global Consulting.

He is a Board-Certified Master Arborist, TRAQ (Tree Risk Assessment Qualification) qualified and served on the Board of Directors and on the Education Committee, Florida Chapter International Society of Arboriculture as well as being Past President of the Chapter.

Dr. Ali also served as an Adjunct Professor at Florida Southwestern State College and at Hodges University in Ft. Myers, FL. He has written a book on Pest Management in the Landscape. In addition, he has presented 130 scientific and training seminars and authored more than 300 scientific and trade-oriented articles.

Recovery of Native Vegetation: Opportunities for the Recovery of Brazilian Forests

Diolina Moura Silva[1], Gabriel Browne de Deus Ribeiro[2] and **Maisa Isabela Rodrigues[3]**

[1]Universidade Federal do Espírito Santo, Centro de Ciências Humanas e Naturais, Programa de Pós-Graduação em Biotecnologia, Núcleo de Estudos da Fotossíntese, Brasil
[2]Universidade Federal do Espírito Santo, Centro de Ciências Agrárias e Engenharias, Departamento de Ciências Florestais e da Madeira, Brasil
[3]Universidade de Brasília, Campus Darcy Ribeiro, Faculdade de Agronomia e Medicina Veterinária, Brasil

Brazil has an Environmental Liability (PA) in private areas of up to 4 fiscal modules of approximately 16.2 million ha, with the Environmental Liability classified as Severely Degraded (PASD) of 0.58 million ha. A broad diagnosis with environmental, economic, social and structural components to assess the conditions for implementing a National Forest Recovery Plan indicated that the Northeast and North regions have a greater lack of supply of inputs and services related to forest restoration, especially the Northeast, which has high PA and PASD in relation to its area (17.3% and 0.9%, respectively). This requires efforts in the allocation of resources for restoration, such as increasing seedlings, fertilizers and other inputs, services, technical support and human capital. The other regions (Southeast, Central- West and South) are considered more developed in terms of inputs and services, which could facilitate the implementation of recovery projects in the medium term – even if they still have deficiencies and require significant efforts. Using a specific methodology, 11 key species with potential for forest recovery were identified: açaí, coagulated latex, sisal or agave fiber, hearts of palm, annatto, cashew nuts, yerba mate, cocoa, coconut, guarana seeds and oil palm. All of these are species with economic interest, an established production chain and non-timber use. Other species with potential for recovery, which have a market and cultural importance are not excluded and should be evaluated for each region and project. In order to identify the potential adherence of rural producers to the proposed key

species, a survey was carried out to determine which municipalities with PASD produce at least one of these listed species (Figure 1).

Fig. 1. Production of key species by municipality. State limits, Producing Municipialities and non-producing municipialities

The main forest species with wood potential produced in each region of Brazil were also identified (Table 2).

Table 1. Wood forest species produced in Brazil.

Region	Popular name	Specie
NORTH	Castanheira	*Bertholletia excelsa*
	Cumaru	*Dipteryx odorata*
	Pequiá	*Caryocar edule*
NORTHEAST	Angico branco	*Anadenanthera colubrina*
MIDWEST	Angico branco	*Anadenanthera colubrina*
	Cumaru	*Dipteryx odorata*
SOUTHEAST	Angico branco	*Anadenanthera colubrina*
SOUTH	Araucária	*Araucaria angustifólia*
	Angico branco	*Anadenanthera colubrina*

There are several relevant variables that need to be met for this plan to be successful: (i) landowners and support agencies need to be involved in order to promote forest restoration, not only as an environmental issue, but also as an economic, social and national development issue; (ii) there is a significant lack of technical assistance and rural extension; (iii) there is a

need to implement new Demonstration Units for forest restoration and strengthen existing ones, given the particularities of each Brazilian biome, so that the restoration approach can provide perspectives for both commercial production and the management of non-timber and timber resources. Collaboration between professionals, researchers, policy makers and funders is essential to achieve climate, biodiversity and rural development goals in forest restoration.

Biography

Diolina Moura Silva completed her doctorate in Plant Physiology at the Federal University of Vicosa (UFV) in 1998. She is currently a Full Professor at the Federal University of Espírito Santo. She is also professor-advisor of the Graduate Program in Plant Biology and the Graduate Program in Biotechnology at the Federal University of Espírito Santo. She was the Coordinator of the Graduate Program in Plant Biology from its creation in 2003 until 2007. She works in the area of Plant Physiology and Biotechnology. She is the coordinator of the Photosynthesis Research Center, developing projects focused on the Photosynthesis of cultivated plants and particularly on the ecophysiology of fruit trees. In the context of her scientific and technological production, transient fluorescence of chlorophyll a, Photochemical efficiency, Photosynthesis.

Genomics-Enabled Dissection of Biosynthetic Machineries in Endangered Medicinal Herbs of Indian Himalayas

Rajinder Singh and **Varun Kumar**

Centre for Life Sciences, Mahindra University, India

Medicinal plant species of Indian Himalayas have been used by biotech and pharma industry in the preparation of herbal drug formulations or sources of medicinal compounds. However, endangered status of these species has warranted the development of alternate production routes for chemical constituents, which are complex natural products (secondary metabolites) belonging to diverse classes of iridoid glycosides, alkaloids, lignans and terpenoids, thereby, complicating their production through synthetic chemistry. We used combination of approaches such as bio-retrosynthetic linking and characterization of metabolite intermediates, enzyme inhibitor assays, comparative genomics, differential transcriptomics (NGS, qRT-PCR), and co-expression networks to decipher biosynthetic machineries. As a result pathway genes were mapped to 42 and 35 steps for iridoid glycosides (Picroside-I and Picroside-II) biosynthesis in *Picrorhiza kurroa*; 50 steps for aconites (atisine) in *Aconitum heterophyllum*; 26 steps for swertiamarin, 30 steps for amarogentin and 30 steps for mangiferin in *Swertia chirayita* and 33 steps for podophyllotoxin biosynthesis in *Podophyllum hexandrum*. However, most of the genes in biosynthetic pathways of secondary metabolites in plants occur in multiple copies as paralogues, thereby, complicating their functional validation. We designed a strategy to identify and prioritize paralogues of pathway genes associated with contents of metabolites by using differential transcriptomes in different tissues of varying metabolite contents. All transcripts for a particular pathway gene were identified, clustered based on multiple sequence alignment to notify as a representative of the same gene (≥ 99% sequence identity) or a paralogue of the same gene. Further, individual paralogues were tested for their expression level *via* qRT-PCR in tissue-specific manner resulting in pinpointing the association of a gene paralogue with the content of target metabolite. Functional validation of these paralogues is being done through gene silencing to strategize metabolic engineering.

Biography

Prof. Rajinder Singh CHAUHAN did his PhD from HP Agriculture University, India in 1991 with honours. He has 30 years post-PhD academics experience in setting up educational and research programmes in Biotechnology and Bioinformatics. He is recipient of national awards, Jawahar Lal Nehru Academic Award of the Indian Council of Agricultural Research, Govt. of India and the Pran Vohra Award of the Indian Science Congress Association for significant research contributions in plant biotechnology. He was awarded overseas fellowships by the Ministry of Science & Technology, Govt of India to pursue advanced research in genomics and bioinformatics at the University of Wisconsin, Madison, USA (1997-2004). Prof. Chauhan is a prolific researcher with 6 patents granted, 20 PhDs awarded, 110 national and international publications and close to INR 25 Crores of R&D funding through competitive research grants.

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

The Biochar as a Microbiome Carrier for Fast Soil Restoration

Mattia Terzaghi[1], Gaetano Pazienza[1], Cecilia Lasorella[1], Paolo Piccolo[2] and Francesco Guarino[2]

[1]University of Bari Aldo Moro, Italy
[2]University of Salerno, Italy

Introduction: Soil biodiversity is crucial for sustaining aboveground vegetation and providing essential ecosystem services. Unfortunately, land degradation threatens agricultural productivity and urban environments, exacerbating greenhouse gas emissions and disrupting water cycles. Biochar soil amendments are gaining attention for their ability to improve soil health and promote plant growth. Pre-conditioning biochar with nutrients or beneficial microbes is emerging as a cost-effective method to enhance these benefits.

Aims: This study evaluates whether pre-conditioned biochar effectively transfers beneficial microbiota from healthy ecosystems to degraded soils and assesses its impact on soil biodiversity and plant growth.

Materials and Methods: Biochar was pre-conditioned in biodiversity-rich grassland-forest transition zones and sustainable agricultural soils, buried a few centimeters below the soil surface, and left in contact with microbial communities for four to six months. Degraded soils were collected from chemically impacted agricultural land and urban areas polluted with anthropogenic materials. A controlled pot experiment was conducted in a growing room with four treatments: sterilized soil, unamended soil, soil with unconditioned biochar, and soil with pre-conditioned biochar. *Solanum lycopersicum* (tomato) and *Pinus halepensis* (Aleppo pine) were chosen as test plants. In the study were measured plant growth, soil chemical properties, microbial activity, and microbiome composition.

Results: Early results indicate that biochar-amended soils significantly increased root mass, length, and branching, especially with pre-conditioned biochar. Microbiological analyses

revealed higher biodiversity and a greater presence of plant growth-promoting microbes in soils treated with pre-conditioned biochar. These findings suggest that pre-conditioning biochar in diverse ecosystems is a promising method for restoring soil health and enhancing ecosystem resilience. Ongoing microbial sequencing will further elucidate biochar's influence on soil microbiomes.

Biography

Dr. Mattia Terzaghi is a researcher at the University of Bari A. Moro, where he teaches General Botany. His career began in 2008 with a PhD in Environmental Science at the University of Insubria, Varese, focusing on fine-root growth dynamics in natural and managed forests. After his PhD, he held several postdoctoral positions at Insubria, studying root systems in trees and crops, as well as seed germination and root anatomy. In 2017, he collaborated with the USFS Rocky Mountain Research Station in Moscow, Idaho, on tree root architecture. In 2019, he moved to the University of Salerno to study biochar in olive groves. In 2022, he joined the University of Bari, where his research now focuses on plant root responses to biochar-amended substrates and root communication, both intra- and interspecific.

PEERS ALLEY MEDIA

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Large-Scale Gene Expression Alterations Introduced by Structural Variation Drive Morphotype Diversification in *Brassica oleracea*

Feng Cheng[1,4], Xing Li[1,3], Yong Wang[1,3], Chengcheng Cai[1,2,3], Jialei Ji[1,3], Fengqing Han[1,3], Lei Zhang[1,3], Shumin Chen[1], Lingkui Zhang[1], Yinqing Yang[1], Qi Tang[1], Johan Bucher[2], Xuelin Wang[1], Limei Yang[1], Mu Zhuang[1], Kang Zhang[1,4], Honghao Lv[1,4], Guusje Bonnema[2,4], and **Yangyong Zhang[1,4]**

[1]State Key Laboratory of Vegetable Biobreeding, Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences, China
[2]Plant Breeding, Wageningen University and Research, The Netherlands
[3]These authors contributed equally
[4]Corresponding authors

Brassica oleracea, globally cultivated for its vegetable crops, consists of very diverse morphotypes, characterized by specialized enlarged organs as harvested products. This makes *B. oleracea* an ideal model for studying rapid evolution and domestication. We constructed a *B. oleracea* pan-genome from 27 high-quality genomes representing all morphotypes and their wild relatives. We identified structural variations (SVs) among these genomes and characterized these in 704 *B. oleracea* accessions using graph-based genome tools. We show that SVs exert bi-directional effects on the expression of numerous genes, either suppressing through DNA methylation or promoting probably by harboring transcription factor-binding elements. The following examples illustrate the role of SVs modulating gene expression: SVs promoting *BoPNY* and suppressing *BoCKX3* in cauliflower/broccoli, suppressing *BoKAN1* and *BoACS4* in cabbage and promoting *BoMYBtf* in ornamental kale. These results provide solid evidence for the role of SVs as dosage regulators of gene expression, driving *B. oleracea* domestication and diversification.

Biography

Dr. Cheng Feng obtained his Ph.D. in genetics from the Beijing Institute of Genomics, Chinese Academy of Sciences in 2010, where he focused on human genetics. That same year, he began his career at the Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences (IVF-CAAS), with special interest in evolution and domestication of Brassica species. Currently, Dr. Feng Cheng is a Professor at IVF-CAAS and leads the Bioinformatics Group, where his research uses multi-omics and gene editing technologies to dissect the genetic basis and molecular networks underlying important traits in Brassica oleracea crops and peppers.

One-Step Creation of CMS Lines using a *BoCENH3*- Based Haploid Induction System in Brassica Crop

Zhansheng Li[1], Fengqing Han[1,5], Xiaoli Zhang[2,5], Yuxiang Liu[3,5], Yumei Liu[1], and **Hong Zhao[4]**

[1]State Key Laboratory of Vegetable Biobreeding, Institute of Vegetables and Flowers, Chinese Academy of Agricultural Sciences, China
[2]State Key Laboratory of Vegetable Biobreeding, Tianjin Academy of Agricultural Sciences, China
[3]Key Laboratory for Vegetable Biology of Hunan Province, Engineering Research Center for Horticultural Crop Germplasm Creation and New Variety Breeding, Ministry of Education Hunan Agricultural University, Changsha, China
[4]Beijing Vegetable Research Center (BVRC), Beijing Academy of Agricultural and Forestry Sciences, National Engineering Research Center for Vegetables, China
[5]These authors contributed equally: Fengqing Han, Xiaoli Zhang, Yuxiang Liu

Heterosis utilization in a large proportion of crops depends on the use of cytoplasmic male sterility (CMS) tools, requiring the development of homozygous fertile lines and CMS lines. Although doubled haploid (DH) technology has been developed for several crops to rapidly generate fertile lines, CMS lines are generally created by multiple rounds of backcrossing, which is time consuming and expensive. Here we describe a method for generating both homozygous fertile and CMS lines through *in vivo* paternal haploid induction (HI). We generated in-frame deletion and restored frameshift mutants of *BoCENH3* in *Brassica oleracea* using the CRISPR/Cas9 system. The mutants induced paternal haploids by outcrossing. We subsequently generated HI lines with CMS cytoplasm, which enabled the generation of homozygous CMS lines in one step. The *BoCENH3*-based HI system provides a new DH technology to accelerate breeding in Brassica and other crops.

Biography

Dr. Zhansheng Li studied vegetable sciences at the Graduate School of Chinese Academy of Agricultural Sciences (GSCAAS), Zhansheng Li graduated and received his doctor degree in 2012. He then worked as a researcher in broccoli breeding and biotechnology at the Institute of Vegetables and Flowers - Chinese Academy of Agricultural Sciences (IVF-CAAS). He obtained the position of Professor at the IVF- CAAS since 2023. He has published more than 60 research articles in SCI (E) journals.

Impact of Mangrove Vegetation on Sequestration of Blue-Stock Carbon in Coastal Soils

G.N.Chattopadhyay[1], Santanu Patra[1], Pradipto Sow[1], Ajanta Dey[2], Nimai Bera[2] and **Sabyasachi Chakrabarty[2]**

[1]Seacom Skills University, India
[2]Nature Environment and Wildlife Society, India

Carbon sequestration, which refers to the process of accumulating the atmospheric CO_2 in sinks, has now emerged as an important mitigation measure to combat global warming. Among various plant-based C sequestration systems are coastal vegetations which contribute about 50% of the total "Blue Stock C" stored in the marine sediments. Mangrove forests constitute an important component of this coastal ecosystem occupying a large share of this soil organic C (SOC) reserve.

To assess the potential of mangrove vegetation in sequestering atmospheric C, we reviewed the SOC status of mangrove soils and discussed the results with regard to those in the corresponding non-mangrove ones. The studies revealed the mangrove soils to maintain high status of SOC in different forms, the values depending largely on the nature and magnitude of occurrence of mangrove vegetations and also the soil conditions. Total organic C (TOC), which includes different fractions of SOC and is considered to indicate the total quantity of sequestered C in a soil at any point of time, showed appreciably higher values in mangrove soils over the non-mangroves. Similarly, the non-labile form, representing the calcitrant form of SOC, was also present in substantially higher amount in the mangrove soils. This significant contribution of the mangrove vegetations to C sequestration was attributed to their high efficiency of converting atmospheric CO_2 into plant biomass C through photosynthesis and also the depositional environments which trap particulate C from within the ecosystem and/or the external sources.

In view of the observed importance of mangrove vegetation in retaining atmospheric C as SOC through gross as well as long term sequestration and also the fact that about 50% of the

global mangrove ecosystems have already disappeared due to anthropogenic activities, this communication emphasizes the need for developing robust mangrove management plans for sustenance and restoration of these vegetations leading to upscaling the sequestration of “Blue Stock C”.

Biography

Prof. Gunindra Nath Chattopadhyay (b.1947) obtained his Ph.D. degree in Agricultural Chemistry and Soil Science. He remained engaged in research, development, teaching and extension activities for more than 40 years in Central Inland Fisheries Research Institute of Indian Council of Agricultural Research and Visva-Bharati University, India. After superannuation, he served an industrial house as Technical Adviser for more than seven years. Presently, Dr. Chattopadhyay is associated with Seacom Skills University as an Emeritus Professor. Major areas of his study are soil and water quality management in aquaculture, soil fertility stewardship and waste recycling in agriculture as well as aquaculture.

Impact of Biochar and Compost Amendments on Rhizosphere Microbial Diversity: A Metagenomic Perspective

Guarino F[1], Cicatelli A[1], Piccolo P[1], Terzaghi M[2] and **Castiglione S[1]**

[1]Department of Chemistry and Biology "A. Zambelli", University of Salerno, Italy
[2]Department of Bioscience, Biotechnologies and Environment, University of Bari, Italy

In recent years, the urgent need to recover urban and agricultural soil in accordance with sustainability principles and the circular economy has gained increasing attention. Biochar and compost, applied as soil amendments, have emerged as effective strategies to support this transition. The experimental site is an olive orchard located in the municipality of Fisciano, in South Italy, next to the University of Salerno. Olive trees were estimated to be 50±3 years old. This study aimed to investigate the effects of biochar and/or compost application in the olive orchard. Olive trees were selected with a minimum spacing of 6m between each other. A randomized block experiment was set up with five treatments and five replicates. The treated area around each tree was delimited by two boundaries, 0.5m and 1.5m from the trunk. The treatments included: biochar (B), compost (C), biochar+compost (B+C), commercial mineral fertilizers (M), and a control (CNT). Biochar was applied at the beginning of the study, while compost and mineral fertilizers were applied annually. At the end of the experimentation, fine roots were collected, the DNAs were extracted from their rizosphere, and v3-v4 regions of the 16SrRNA gene amplified and sequenced trough Next-Generation-Sequencing. The metagenomic results revealed that the most represented phylum, for all the experimental group, were Acidobacteria, Alphaproteobacteria and Gammaproteobacteria. Furthermore, some bacterial classes, as DA052, Coriobacteriia, MJK10, OPB56 and GKS2-174 were specific to CNT, M, B, C and B+C, respectively. However, the alpha diversity values were higher in the CNT compared to treatments with mineral fertilizers ($p<0.05$), B, C, and B+C ($p<0.05$). In summary, for this soil, the application of organic amendments and commercial mineral fertilizers did not provide any advantage in terms of species richness for rhizosphere microorganisms, but the different soil improvers affected the presence and relative frequencies of the less represented OTUs.

Biography

Prof Francesco Guarino is Associate Professor specializing in plant-bacteria interactions and molecular plant biology. Thier work focuses on epigenetic modifications in natural plant populations with low genetic diversity, particularly in response to biotic and abiotic stress. Studies have examined DNA methylation patterns in clonal species (e.g., *Phragmites australis* and *Populus alba*, collected from diverse environmental conditions. FG has also investigated rhizosphere bacterial communities through culture-dependent and next-generation sequencing (NGS) approaches, identifying plant growth-promoting bacterial strains and analyzing microbial shifts during phytoremediation of contaminated sites. More recently, their research has expanded to improving wastewater treatment processes using green technologies like phytoremediation and constructed wetlands. These studies explore the synergy between plant species and pollution-tolerant bacterial strains to enhance water purification efficiency.

Molecular and Phytochemical Markers Based Genetic Diversity and Population Structure Studies of *Dendrocalamus hamiltonii*, an Edible Bamboo of Manipur, North-East India

Potshangbam Nongdam and **Thoungamba Amom**

Department of Biotechnology, Manipur University, India

Dendrocalamus hamiltonii, a highly popular bamboo, has been rampantly exploited for its edible shoots as food and culms for handicraft and constructive purposes. It has witnessed alarming population depletion in Manipur, India, and efficient conservation approaches are crucial to save this valuable bamboo from the brink of extinction and harness its wide range of economic potential. Evaluating the genetic variability and population structure of this bamboo is extremely important for developing effective conservation strategies.

Genetic diversity and population structure studies were conducted on *D. hamiltonii* of Manipur, using molecular and phytochemical markers. 12 ISSR and 11 SCoT primers generated 100 and 141 polymorphic bands, respectively, exhibiting high polymorphism. Combined marker analysis displayed low genetic differentiation among populations (G_{st} = 0.304) due to a relatively high estimate of gene flow (N_m = 1.310) (Table 1).

Table 1. Genetic diversity within populations and genetic differentiation parameters of 6 populations *D. hamiltonii* using ISSR and SCoT markers.

Population	N_a	N_e	H	I	PPB (%)	Ht	H_s	Gst	Nm
VLY	1.696	1.309	0.195	0.306	69.64				
CCP	1.660	1.288	0.180	0.283	66.07				
CDL	1.631	1.172	0.123	0.209	63.10				
UKL	1.642	1.157	0.114	0.198	64.29				
TML	1.511	1.270	0.164	0.250	51.19				
SPT	1.321	1.128	0.085	0.136	32.14				
Average	1.576	1.220	0.143	0.230	57.73				
Species level	2.000	1.304	0.202	0.333	100	0.206	0.143	0.304	1.310

Note: N_a- Observed number of alleles; N_e- Effective number of alleles; H- Nei's genetic diversity; I- Shannon's information indices; PPB- Percentage of polymorphic band; Ht- Total genetic diversity; H_s- Genetic diversity within populations; Gst- Relative magnitude of genetic differentiation among populations; Nm- Estimate of gene flow among populations.

Analysis of molecular variance (AMOVA) further presented low genetic variation (30%) between the populations and high diversity (70 %) within the populations. BARRIER analysis recognized 5 putative genetic barriers separating *D. hamiltonii* populations, showing the possible interference to gene flow. Neighbor-joining dendrogram and principal coordinate analysis (PCoA) showed mixed clustering patterns. Bayesian model STRUCTURE analysis grouped *D. hamiltonii* populations into 3 genetic clusters (K = 3) with high admixture (Figure 1).

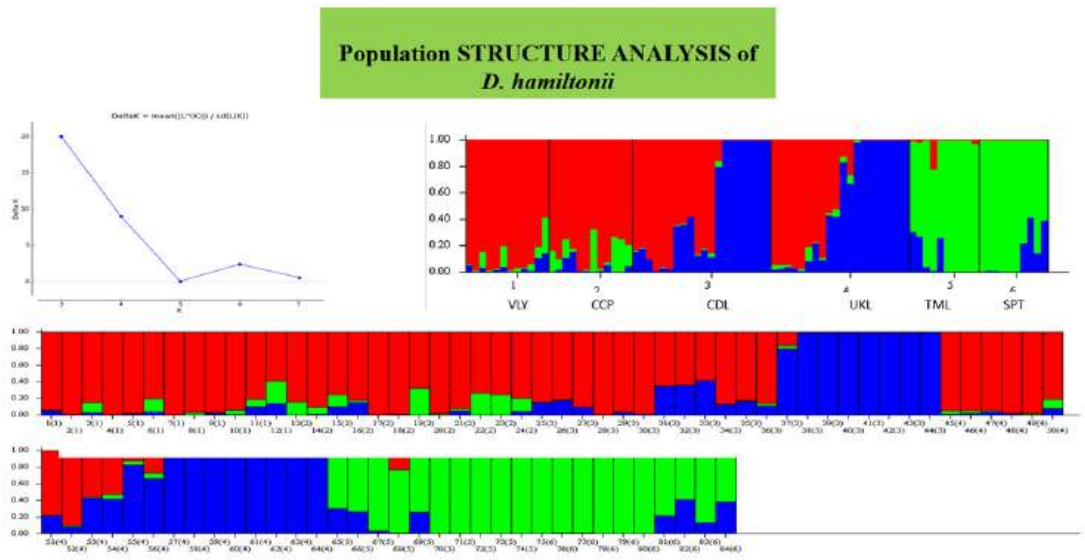

Figure 1: Population structure based on combined marker data

GENELAND further assigned the bamboo genotypes into 6 different genetic pools. The phytochemical marker analysis of bamboo populations further validated the diversity profile depicted through molecular markers studies. The Mantel test showing the significant positive correlation between the genetic and phytochemical distance (r = 0.64, P = 0.01) further affirmed that the phytochemical investigation could corroborate the molecular diversity studies.

The study evaluated the conservation status of *D. hamiltonii* in Manipur, and the crucial genetic findings from the present investigation might be utilized for genetic improvement and effective management of this depleting bamboo species in the region.

Biography

Prof. Potshangbam Nongdam is an active academician and researcher specializing in Plant Biotechnology, currently serving as Professor and Head of the Department of Biotechnology at Manipur University, India. He earned his Ph.D. in Biotechnology from Panjab University, India, and pursued postdoctoral research at the University of Florida, USA, under the SIRE Fellowship. He has a prolific academic career spanning over two decades, marked by significant contributions to the fields of *in vitro* propagation of plants, molecular clonal fidelity assessment, genetic diversity studies, conservation genetics, and traditional medicinal plants. He has published over 100 research papers and book chapters in reputed high-impact journals and well-established publications. Besides being an active peer reviewer for many high-quality journals, he has also presented research papers at national and international conferences. His research works have attracted more than 1400 citations with h- index of 22 and an i-10 index of 33.

Cloning Technology for Date Palm for Commercial Application

Sundaravelpandian Kalaipandian[1,2], Amirhossein Bazrafshan[1], Magnolia Hu[1,2], Naga Prafulla Chandrika Nulu[1], Alice Hayward[2], Neena Mitter[2], Steve Adkins[1] and **Victor Galea[1]**

[1]School of Agriculture and Food Sustainability, The University of Queensland, Australia
[2]Centre for Horticultural Science, Queensland Alliance for Agriculture and Food Innovation, Australia

Date palm (*Phoenix dactylifera* L.) is the most important cash crop for the arid and semi-arid regions in the world. Global consumption of fresh and dried dates is constantly increasing yearly. In 2020, the total consumption increased to 9.74 million tonnes globally. Dates are a nutrient rich fruit and are rich in essential vitamins, minerals, and fibre. It is also a highly popular food across the world and on the list of emerging healthy snacks. Thus, such factors forecast an enormous increase in the consumption of dates in the future. Production of high-quality seedlings is one of the major constraints for this growing industry worldwide. Tissue culture technology offers the solution for mass production of desirable high-quality true-to-type seedlings. In this study, tissue culture methods with various hormones and concentrations are currently employed to standardize the protocol for commercial applications with two different explants. Furthermore, genome sequencing techniques will be employed to identify true-to-type plantlets and to identify the best protocol for commercial production. Preliminary results and future research plans will be presented.

Biography

Currently, Dr. Sundar Kalaipandian is an Advance Queensland Industry Research Fellow at The University of Queensland, Australia. He obtained his B.Sc. (Agriculture) and M.Sc. (Plant Breeding and Genetics) from Tamil Nadu Agricultural University, India. He obtained his PhD in Biotechnology from Academia Sinica, Taiwan. He received postdoctoral fellowships from Academia Sinica (Taiwan) and then from Commonwealth Scientific and Industrial Research Organisation (Australia). He has developed expertise in genetics, plant breeding, biotechnology, genomics, and bioinformatics during his career. He is interested in commercialization of scientific technologies for farmers and bringing various technologies from the lab to the field.

Multifunctional Plant Virus Nanoparticles for Targeting Breast Cancer Tumors

Kathleen L Hefferon

Cornell University, USA

Breast cancer treatment using plant-virus-based nanoparticles (PVNPs) has achieved considerable success in preclinical studies. PVNP-based breast cancer therapies include non-targeted and targeted nanoplatforms for delivery of anticancer therapeutic chemo and immune agents and cancer vaccines for activation of local and systemic antitumor immunity. Interestingly, PVNP platforms combined with other tumor immunotherapeutic options and other modalities of oncotherapy can improve tumor efficacy treatment. These applications can be achieved by encapsulation of a wide range of active ingredients and conjugating ligands for targeting immune and tumor cells. This presentation describes current breast cancer treatments based on PVNP platforms.

Biography

Kathleen Hefferon completed her PhD at the University of Toronto, Faculty of Medicine. She worked as a Post. Doc in the Department of Food Science at Cornell and now teaches in the Department of Microbiology at Cornell University. Kathleen is the Founder and CTO of Forte Protein, a biotech company that can generate any protein using plant (as well as other) production platforms. Kathleen was the Fulbright Canada Chair of Global Food Security in 2018 and is the author of several books.

Yield Prediction Models of Organic Oil Rose Farming with Agricultural Unmanned Aerial Vehicles (UAVs)

Sinan DEMİR[1], Mert DEDEOĞLU[2] and **Leven BAŞAYİĞİT[1]**

[1]Isparta University of Applied Sciences, Türkiye
[2]Selçuk University, Türkiye

The rapid advancement of precision agriculture has opened new avenues for sustainable organic farming practices. This study aims to develop and validate yield prediction models for organic oil rose (Rosa damascena) farming using agricultural unmanned aerial vehicles (UAVs). Integrating high-resolution aerial imagery with machine learning algorithms, key agronomic parameters such as vegetation indices and soil sensor data were analyzed to improve yield prediction accuracy.

The methodology involved collecting multispectral UAV imagery and ground sensor data from organic oil rose plantations during critical growth stages. These datasets were used to construct predictive models employing various machine learning techniques, including multiple linear regression (MLR), multivariate adaptive regression splines (MARS), decision trees (CHAID, ExCHAID, and CART), random forest (RF), and artificial neural networks (ANN). The models demonstrated high accuracy, with R^2 values exceeding 0.85, offering actionable insights for optimizing organic farming practices. Notably, early-stage predictions (day 69) showed promising results, with the CART, RF, MARS, and ExCHAID models performing best in predicting yields.

The results highlight the potential of UAV-based remote sensing technologies to reduce input costs, enhance yield predictability, and promote sustainable organic oil rose farming. This study emphasizes the integration of digital technologies in organic agriculture, contributing to the broader goals of sustainability and environmental stewardship.

Biography

Sinan Demir is an academic and an assistant professor at the Department of Soil Science and Plant Nutrition, Faculty of Agriculture, Isparta University of Applied Sciences. His scientific interests include soil mapping, land surveys, remote sensing, and geographic information systems (GIS). He conducts in-depth research on a variety of topics, including plant nutrition, soil fertility, soil conservation, nutrient analysis, and soil pedogenesis. Sinan Demir has also contributed to key initiatives in agricultural remote sensing, hyperspectral data, and digital agriculture. His research examines the physical and chemical properties of soils, the effects of organic waste on agricultural fields, and the impacts of different irrigation systems on soil health. With numerous works published in international journals, Demir aims to contribute to the sustainable development of soil science and agricultural technologies.

Effects of Paclobutrazol on Salinity Tolerance of Bald Cypress, *Taxodium distichum*

Ahmed Ali

Davey Institute, The Davey Tree Expert Company, USA

Climate change likely will result in substantial rise in average sea level with concerns that saltwater intrusion may result in toxic levels of salts in the soil. A 30-month study was conducted in South Florida to evaluate paclobutrazol (PBZ) in moderating salt tolerance of Bald Cypress (*Taxodium distichum*) trees. Young trees growing in a natural area close to the Gulf of Mexico were selected for the study. PBZ was soil applied at two labelled rates in the beginning of the study. Tree quality (canopy density and leaf color) was evaluated visually on a scale of 0 = dead to 5 = excellent. At 17 MAT, both rates of PBZ resulted in 30% improvement compared to the untreated trees. By the end of the study that difference was 17% improvement over the untreated trees. PBZ, to some extent, aids in ameliorating salt tolerance in Bald Cypress. Additional studies are needed to evaluate other rates on Bald Cypress as well as other tree species.

Biography

Dr. Ali has over 40 years of experience in the Green Industry. For the past 25 years he oversaw Davey technical support programs in the USA and Canada. Currently, he is a founding team member of Davey Global Consulting.

He is a Board-Certified Master Arborist, TRAQ (Tree Risk Assessment Qualification) qualified and served on the Board of Directors and on the Education Committee, Florida Chapter International Society of Arboriculture as well as being Past President of the Chapter.

Dr. Ali also served as an Adjunct Professor at Florida Southwestern State College and at Hodges University in Ft. Myers, FL. He has written a book on Pest Management in the Landscape. In addition, he has presented 130 scientific and training seminars and authored more than 300 scientific and trade-oriented articles.

Selection of Biomarkers Responsive to Heavy Metals for the Development of Biosensors to Monitor Environmental Pollution

Alessia Postiglione[1], Martina Dentato[1], Adriana Basile[1], Sergio Sorbo[2] and **Viviana Maresca[3]**

[1]Department of Biology, University of Naples "Federico II" - Monte Sant'Angelo Campus, Italy

[2]Ce.S.M.A, University of Naples "Federico II" - Complesso Universitario Monte Sant'Angelo, Italy

[3]Department of Life Sciences, Health and Health Professions, University of Rome "link Campus", Italy

This study evaluates various structural, biochemical, and molecular responses as potential biomarkers for environmental pollution. Two liverwort species, *Lunularia cruciata* and *Conocephalum conicum*, known for their resilience to air pollution, were analyzed after being collected from sites with varying human impact to assess the biological effects of heavy metal pollution. The research examined multiple biological responses, including heavy metal bioaccumulation (ICP-MS), physiological vitality changes, ultrastructural alterations (TEM), tissue and cellular localization (TEM and SEM), oxidative stress (ROS), heat shock proteins (HSPs) using SDS-PAGE, antioxidant enzyme activity, phytochelatins, gene expression (PCR), and DNA damage (Comet assay). The observed effects were correlated with environmental conditions. Statistical analyses (Kruskal-Wallis and One-Way ANOVA) identified significant differences in responses, while Spearman's correlation test explored data relationships. The results indicated that phytochelatins and HSPs were the most reliable biomarkers. These findings support the development of biosensors for detecting and quantifying heavy metal pollution as part of the LIMBB Project, funded by the Italian Ministry of Economic Development (MISE). The project aims to create an advanced environmental monitoring system using wireless-connected biosensors capable of detecting heavy metals, polycyclic aromatic hydrocarbons (PAHs), and neurotoxic compounds like organophosphate pesticides. These innovative biosensors have applications

beyond environmental monitoring, potentially contributing to human health and safety. The project represents an important step toward advanced technologies for environmental protection and public well-being.

Biography

Alessia Postiglione is a PhD and currently a postdoctoral fellow at the University of Napoli Federico II and professor of Agricultural Botany. She has published more than 15 papers in journals with high impact factor and has strong knowledge in the phytoremediation of air, soil and water. She is co-Guest Editor of a special issue of the MDPI journal Antioxidants.

Biomarkers from Mosses for the Creation of Biosensors of Water Environmental Health from Heavy Metal Pollution

Martina Dentato[1], Alessia Postiglione[1], Adriana Basile[1], Sergio Sorbo[2] and **Viviana Maresca[3]**

[1]Department of Biology, University of Naples "Federico II" - Monte Sant'Angelo Campus, Italy
[2]Ce.S.M.A, University of Naples "Federico II" - Complesso Universitario Monte Sant'Angelo, Italy
[3]Department of Life Sciences, Health and Health Professions, University of Rome "link Campus", Italy

This research presents a comprehensive study on the use of bryophytes, particularly mosses like *Leptodictyum riparium*, as bioindicators for water pollution, specifically for the detection of heavy metal contamination. Several biomarkers, such as heavy metal bioaccumulation, oxidative stress markers (e.g., reactive oxygen species or ROS), and changes in gene expression, were analyzed. The findings highlight that phytochelatins stand out as the most specific biomarkers among those studied, making them pivotal in environmental monitoring.

The study is part of AIMED project, which aims to develop a miniaturized ecosystem for the depuration (removal) of heavy metals and nitrogen compounds from polluted freshwater. This system will incorporate biosensors to detect and quantify pollutants in water, contributing to the development of a prototype that can monitor water quality in real-time.

The innovative aspect of these biosensors lies in their ability to detect both heavy metals and nitrogenous compounds, which are essential for assessing the environmental and public health impacts of water pollution. The project is a significant step towards creating advanced, technology-driven solutions for improving environmental monitoring and ensuring human health safety, especially in the context of water contamination.

It also represents the first move towards more sophisticated devices that could play a role in future technologies aimed at both environmental conservation and human well-being.

Biography

Martina Dentato is a Phd student at University of Naples “Federico II”. Her interests and studies focus on the use of bryophytes as bioindicators of heavy metal pollution, especially in watercourses in Southern Italy. A further topic of research focuses on the use of plant extracts like essential oils on tumoral cell lines in order to evaluate their beneficial properties.

Chemical Components of Stevia and their Interactions with Ionizing Radiation

Nelida Lucia del Mastro

Institute of Nuclear and Energy Researches- IPEN/CNEN, Brazil

Stevia (*Stevia rebaudiana* Bertoni) is an aromatic plant known for its high sweetening power ascribed to its glycosides. Among the various steviol glycosides, stevioside, rebaudioside A and rebaudioside C are the major metabolites and these compounds are on average 250-300 times sweeter than sucrose. Steviol is the final product of stevia metabolism; the metabolized components essentially leave the body and there is no accumulation. Stevia also contains several bioactive compounds showing antioxidant, antiproliferative, antimicrobial, and anti-inflammatory activities, owing to the presence of various compounds with medicinal significance such as phenolic compounds, flavonoids, diterpene glycosides, condensed tannins, anthocyanins, and phenolic acids. Stevia water extracts contained high amounts of free radicals, hydroxyl radicals and superoxide anion radical scavenging activities. Since inflammation and oxidative stress play critical roles in the pathogenesis of many diseases, stevia emerges as a promising natural product that could support human health. On the other hand, when ionizing radiation hits an atom or molecule in a cell, it can cause an electron to be lost, which forms a free radical. Although high doses of radiation can be lethal to plants, low doses of radiation can promote growth, accelerate development, and increase tolerance to stressors. Studies showed that low doses of ionizing radiation caused stimulation of seeds germination. Also, mild gamma radiation doses were found to be effective in increasing the overall glycosidic content and may be used in stevia mutation programmes. The aim of the present article is to highlight the relationships among chemical components of stevia and their interactions with ionizing radiation.

Biography

Dr. Nelida Lucia del Mastro studied Chemistry at the Buenos Aires University, Argentina and got a MSc at the University of Sao Paulo (USP), Brazil. She then joined the Institute of Energy and Nuclear Researches (IPEN/CNEN) in Sao Paulo, Brazil, working in biological radiation effects. She received her PhD degree in 1983 in Biochemistry at the USP. At present she is senior researcher and consultant on radiation applications on Agriculture, Foods and Public Health. She has published more than 70 research articles in SCi journals (see: CV: https://lattes.cnpq.br/8541245790089233).

PEERS ALLEY MEDIA

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Environmental Regularization in Brazil: Challenges for the Advancement of Dynamic Analysis

Patrícia Bourguignon Soares[1], Geraldo Rossoni Sisquini[2], Sabrina Garcia Broetto[1], Eustáquio Vinícios Ribeiro de Castro[3] and **Diolina Moura Silva[1]**

[1]Photosynthesis Research Center, Biotechnology Graduate Program, Federal University of Espirito Santo, Brasil

[2]Department of Mechanical Engineering, Technological Center, Federal University of Espirito Santo, Brasil

[3]Chemistry Department, Exact Science Center, Federal University of Espirito Santo, Brasil

The objective of this study was to map the main bottlenecks and challenges in the analysis of the Rural Environmental Registry (CAR) faced by the Federative Units of Brazil. To this end, a Discovery Journey was carried out, including semi-structured qualitative interviews with representatives of all units, aiming to collect detailed information to support decision-making. The results highlighted the existence of bottlenecks related to management, legislation, infrastructure and technical difficulties. The Causation Matrix constructed was important to help understand the main root problems and understand the relationships between them. Thus, the Discovery Journey not only contributed to a better understanding of the barriers faced, but also to the definition of coordinated actions that can accelerate environmental regularization in the country.

Biography

Patrícia Bourguignon Soares completed her Masters in Civil Engineering from UFES, with the title “Science, Technology & Innovation Indicators: Analysis of the Scientific and Technological Production of the Knowledge Area in Civil Engineering in the Web of Science”, completed in 2014. Postgraduate degree in Oil and Gas Management from FAESA and a degree in Business Administration from Faculdade Estacio de Sá de Vitoria (2004). Currently, she is a PhD student in Biotechnology program of UFES and acts as Project Manager at Fundação Espírito Santense de Tecnologia - FEST, managing Research and Development projects developed within the scope of the Federal University of Espírito Santo.

PEERS ALLEY MEDIA

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Microbial Reduction-Mediated Sulfur Dynamics Govern Arsenic Mobilization and Redistribution in Contaminated Soils

Muhammad Zeeshan Basheer [1,2], Cai Xiaolin[1,2], Yanshan Cui[1,2] and **Syed Ali Hassan[1,2]**

[1]College of Resources and Environment, University of Chinese Academy of Sciences, China
[2]Research Center for Eco-Environmental Sciences, Chinese Academy of Sciences, China

Arsenic contamination in soils represents a critical environmental and public health concern on a global scale. A comprehensive understanding of the complex factors governing arsenic mobilization is essential for developing effective remediation strategies. This study explores the interactions between sulfur content, microbial activity, and arsenic behavior in contaminated soils, with a focus on how these variables influence arsenic release and redistribution under neutral conditions. Experimental investigations were conducted to evaluate arsenic release and reduction in soils with varying sulfur levels, comparing the effects of As(V)-reducing bacteria to abiotic controls. The results revealed that microbial reduction significantly enhanced arsenic mobilization, with the extent of release varying by sulfur content. Under pH 5 soils conditions, As(III) concentrations increased by approximately 837 µg/L in high-sulfur soils and 1347 µg/L in low-sulfur soils, following microbial activity. At pH 7 soils, As(III) concentrations rose by approximately 1202 µg/L in high-sulfur soils and 2700 µg/L in low-sulfur soils. These findings suggest that soils with higher sulfur content exhibited significantly lower As(III) and Fe release compared to soils with lower sulfur content. Sequential extraction analysis indicated that As(V)-reducing bacteria primarily facilitated the release of adsorbed arsenic species, particularly from amorphous and weakly crystalline phases. Additionally, an increase in sulfide concentrations was observed at the end of the incubation period. This study demonstrates that elevated sulfur levels in soils can mitigate arsenic and iron release under anaerobic, microbially reducing conditions. The research underscores the complex interdependencies between sulfur, microbial processes, and arsenic dynamics, contributing to a deeper understanding of arsenic fate in contaminated soils and informing future remediation efforts.

Figure

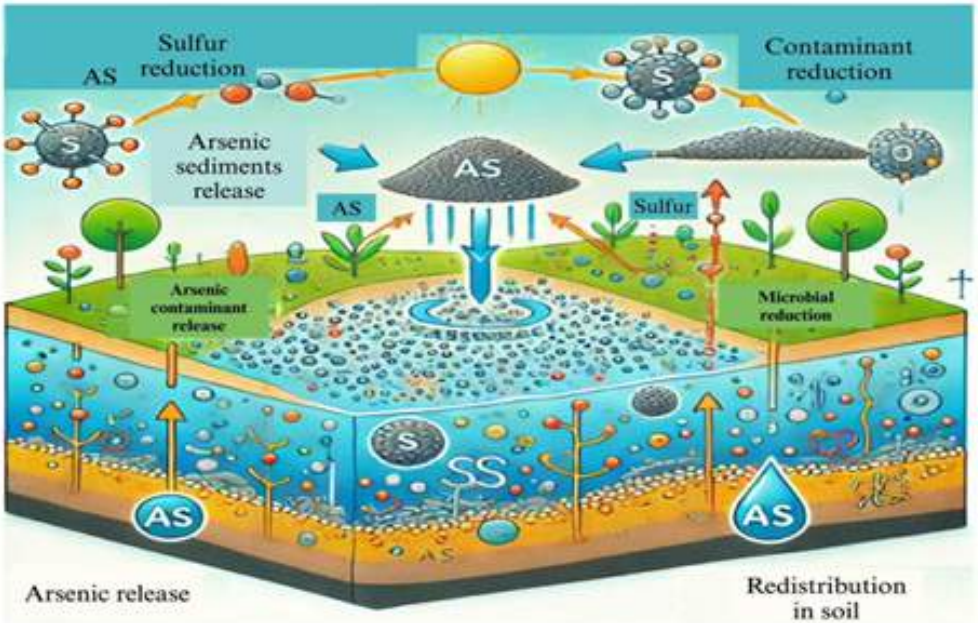

Table. Analysis of physical-chemical properties of collected soil samples

Selected soil samples	Sampling site	Type	pH	OM (g/kg)	FeOx (g/kg)	MnOx (g/kg)	Fe (g/kg)	S % (mg/kg)	Mn (mg/kg)	As (mg/kg)
pH 5 High sulfur	Hunan Hengyang 2	Farmland	4.96	39.79	6.95	0.12	20.49	0.16	0.11	265.04
pH 5 Low sulfur	Guangxi	Sand	4.50	0.40	1.10	0.10	7.50	0.02	0.10	429.50
pH 7 High sulfur	Xinjiang 4	Industrial Park	7.18	28.60	0.72	0.23	27.34	0.30	0.71	600.21
pH 7 Low sulfur	Guangxi	Farmland	7.50	2.00	2.40	0.10	24.10	0.05	0.10	484.51
pH 9 Low sulfurI	Shanxi	New mining area	8.30	0.80	0.90	0.40	0.50	0.02	0.00	495.97
pH 9 Low sulfurII	Henan	Farmland	8.40	0.70	1.00	0.10	20.60	0.01	0.40	453.59

Biography

Muhammad Zeeshan Basheer has completed his master's at University of Chinese Academy of Sciences Beijing, with the prestigious ''The Belt and Road'' fully funded scholarship. As a master's student, he brings a solid academic foundation, strong research capabilities, a collaborative mindset, excellent communication skills, and a continuous learning attitude to any academic or professional setting. His experiences and skills positioned him as a dedicated and versatile individual ready to contribute to the advancement of knowledge in his field. It might be appropriate to mention that he has done job at Pakistan Environmental Protection Agency (Pak-EPA), Islamabad, Pakistan for a period of 2 years. During this tenure, he managed and executed vigorous monitoring schedule of twenty stream and wetland restoration sites for various research purposes. He collaborated with multi-disciplinary team to complete various tasks in the field.

PEERS ALLEY MEDIA

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Mathematical Model to Express the Protein Folding as Environment Dependent Process

Irena Roterman and **Leszek Konieczny**

Jagiellonian University – Medical College Krakow, Poland

Objectives: Despite of the significant progress in protein structure prediction based on the artificial intelligence (deep learning technique) the search for mechanism of protein folding is still unknown.

Scope: The main assumption expressed in the presented model is the dependence on the environmental conditions. The water conditions direct the folding process toward the fuzzy oil drop form of hydrophobicity distribution with centric hydrophobic core with polar surface, what can be reached in different forms. The local disorder in respect to micelle-like distribution helps the identification of specificity coding system.

Results: The application of the model to the spectrum of different proteins can prove the reliability of the fuzzy oil drop model. The level of discordance: local or distributed all over the protein body can be measured to express the participation of other than polar water factors in folding environment like: membrane, chaperone or chaperonin and conditions in ER as well as in Golgi apparatus.

Methods: The computer analysis expressing the degree of hydrophobicity distribution accordant with 3D Gauss function allows the identification of local discordance which can be treated as the coding system of biological activity.

Conclusion: The participation of different factors in folding environment directs the folding process toward the well-defined conformational sub-space reducing significantly the multi-objective optimization with application of Front Pareto techniques particularly. In consequence the funnel model (representation of multiple minima problem) from the qualitative form can be transformed to quantitative form with measurable scale expressing

the participation of external conditions limiting the conformation space to the appropriate one for defined external conditions.

Biography

Irena Roterman – prof of bioinformatics - protein structure and amyloid transformation. Employed at Jagiellonian University – Medical College Krakow, Poland. Educated in theoretical chemistry, specialized in computer techniques oriented on biological issues.

- Two years postdoc at Cornell University – H. A. Scheraga group.
- Chief Editor of the journal *Bio-Algoriythms and Med Systems* (2000-2020 https://bamsjournal.com/).
- Author of 150 publications (according to PubMed) and books: Springer https://link.springer.com/book/10.1007/978-3-031-31557-2), Walter de Gruyter (ISBN (978-3-11-04064403), Elsevier (elsevier.com/books/from-globular-proteins-to-amyloids/roterman-konieczna/978-0-08-102981-7).
- Present on the 2% top scientists list – Stanford University.

PEERS ALLEY MEDIA

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Demystification of Colors in Kirlian Photography as a Clinical Diagnostic Method

Wilson Picler[1,2] and **Eduardo Tavares Costa**[1]

[1]FEEC/State University of Campinas (UNICAMP), Brazil
[2]International University Center - Uninter, Brazil

Kirlian photography is the photograph of the "Corona effect" produced when high voltage electric fields are applied to objects, such as fingertips or plant leaves. While Kirlian photography has been explored in the context of alternative therapies for diagnosing various diseases and mental and bioenergetic states, its scientific validity remains a subject of debate. Despite the advancements in digital photography, there has been a resurgence of interest in analog techniques, including Kirlian photography using photographic films. This renewed interest presents an opportunity to re-examine Kirlian photography as a potential diagnostic tool, while also addressing concerns about quackery that were prevalent in the past. This study aims to evaluate the technique and demystify some of the patterns observed in Kirlian photographs to determine their potential as clinical indicators.

Findings

- **Spectral Analysis:** Kirlionic Corona emission spectroscopy revealed a significant amount of ultraviolet radiation, with a smaller portion of light in the visible spectrum, primarily violet and blue.
- **Corona Location:** Experiments demonstrated that the Corona effect could occur both on the top and bottom of the photographic film.
- **Color Variations:** When the Corona occurs only on the top of the film the Kirlian Photograph results in a blue color. However, when the Corona occurs underneath the film, the generated radiation can sensitize the film from the opposite side, leading to severe chromatic aberration.

- **Shapes Changing:** The force that the finger or plant exerts on the film changes the shapes and colors of the Kirlian photographs.

Conclusion

This work showed through an appropriate instrumentation that colors in Kirlian photography can suffer serious aberrations due to corona discharge under the photographic film. The shapes of the photographs also undergo changes with different levels of pressure on the dielectric, making their use for diagnostics difficult or unfeasible.

Biography

Wilson Picler holds the Master's degree in Biomedical Engineering and actually he is a student of doctorate in Electrical Engineering at State university of Campinas in (UNICAMP) in Brazil. He is graduated in Physics and Specialist in Science Methodology. He has also a Technical Degree in Electronics. Class A Amateur Radio PY5UN. As a Physics Teacher, he works in New Technologies Applied to Education, development of electronic instrumentation, Management of Educational Institutions and Social Responsibility Projects. Since he was a student of Technical High School in electronics he works demystifying the diagnose by Kirlian photography. Currently, he is the founder and Chairman of Uninter Educational Inc, headquartered in Curitiba, Brazil. He was a Federal Congressman and titular member of Education Commission in the Federal House of Representatives in Brazil (2009/2010).

Eduardo Tavares Costa holds a degree in Electrical Engineering (Electronics) with an emphasis on Computing from the University of São Paulo (1978), a master's in Electrical Engineering with a focus on Automation and Biomedical Engineering from the State University of Campinas (UNICAMP), and a PhD in Medical Engineering & Physics from King's College, University of London (1989). He is currently a full professor at the Department of Electronics and Biomedical Engineering (DEEB/FEEC/UNICAMP) and served as Director of the Biomedical Engineering Center (CEB) at UNICAMP. He was President of the Brazilian Society of Biomedical Engineering (SBEB) and has served on its council multiple times. He has expertise in Biomedical Engineering, particularly in Biomedical Instrumentation, working on sensors, transducers, ultrasound, signal processing, and medical imaging. He is the advisor of Wilson Picler at the Doctorate Program in Electrical Engineering at UNICAMP.

World Congress on
ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY
March 31-April 01, 2025 | Amsterdam, Netherlands

Photosynthetic Evaluation of *Guapira pernambucensis* (Casar.) Lundell under Different Shaded and Technological Conditions

Gabriel Rosa de Sousa, Mariela Mattos Silva and **Diolina Moura Silva**

Departamento de Ciências Biológicas, Núcleo de Estudos da Fotossíntese, Universidade Federal do Espírito Santo, Centro de Ciências Humanas e Naturais, Brasil

The Restinga is a limiting ecosystem with high plant richness, which may present high phenotypic plasticity, crucial for climate change scenarios. Many species' potential remains unexplored, necessitating studies on their responses to various biotic and abiotic factors. This study aimed to determine optimal cultivation conditions for *Guapira pernambucensis*, a native Brazilian plant with wide distribution in the Restingas, under different cultivation systems and light conditions, using photosynthetic parameters as vitality indicators. Four treatments were established: Nursery condition under sunlight (NSL), Nursery condition under shading (NSD), Technological condition under sunlight (TSL), and Technological condition under shading (TSD). In nursery condition, considered low-tech, plants were grown outdoors in containers on metal benches with manual irrigation. In the technological condition, metal benches were placed in a greenhouse with automatic ventilation and irrigation. Shading was applied using 50% polyethylene screens. Chlorophyll a fluorescence was used to estimate parameters related to health and the electron transport chain (ETC) structure, with a portable fluorometer (Handy-PEA+, Hansatech Instruments). Parameters analyzed included energy flows through reaction centers and cross-sections in the ETC, such as absorption, capture, transport, and dissipation, as well as energy conservation performance indexes. After 26 days, qualitative differences in fluorescence kinetics curves were observed in all treatments compared to the reference, with positive amplitudes indicating reduced photochemical potential, such as connectivity and sensitivity of Photosystem II (PSII). Structurally, despite increases in the PSII performance index based on energy absorption (PI_{abs}) and electron transport efficiency on Photosystem I acceptor side (δR_0), increased energy dissipation processes (DI_0/RC) in TSD plants led to reduced photochemical

performance, as seen in quantum yields (φP_0). This suggests that even under controlled conditions, shading can reduce the species' photosynthetic efficiency. These results establish photochemical parameters for evaluating *G. pernambucensis* vitality, indicating the best technological and shading conditions for its cultivation.

Biography

Gabriel Rosa de Sousa is a technician in agriculture from the Federal Institute of Espírito Santo, and he is a Biology undergraduate student at the Federal University of Espírito Santo. He is a scientific Initiation Student at the Photosynthesis Study Center (NEF) linked to the Aquatic Biodiversity Monitoring Program (PMBA/FEST/UFES), coordinated by Professor Diolina Moura Silva. His research focuses on: Phenotypic Plasticity at Different Levels of Irradiance, Internal and External Control of Photosynthesis, and Ecophysiology of Native Plants under Protected Cultivation and Oxidative Stress.

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Inter Species Interaction of Bradyrhizobia Affects their Colonization and Plant Growth Promotion in *Arachis hypogaea*

Dipanwita Patra and **Sukhendu Mandal**

University of Calcutta, India

Bradyrhizobia are the principal symbiotic partner of the leguminous plant and take active part in biological nitrogen-fixation. The present investigation explores the underlying competition among different strains during colonization in host roots. Six distinct GFP and RFP-tagged Bradyrhizobium strains were engineered to track them inside the peanut roots either independently or in combination. The Bradyrhizobium strains require different time-spans ranging from 4 to 21 days post-infection (dpi) for successful colonization which further varies in presence of another strain. While most of the individual strains enhanced the shoot and root dry weight, number of nodules, and nitrogen fixation capabilities of the host plants, no signifcant enhancement of plant growth and nodulation effciency was observed when they were allowed to colonize in combinations. However, if among the combinations one strains is SEMIA 6144, the co-infection results in higher growth and nodulation effciency of the hosts. From the competition experiments it has been found that Bradyrhizobium japonicum SEMIA 6144 was found to be the most dominant strain for effective nodulation in peanut. The extent of biofilm and exopolysaccharide (EPS) production by these isolates, individually or in combinations, were envisaged to correlate whether these parameters have any impact on the symbiotic association. But the extent of colonization, growth-promotion and nitrogen-fixation ability drastically lowered when a strain present together with other Bradyrhizobium strain. Therefore, it is imperative to understand the interaction between two co-inoculating Bradyrhizobium species for nodulation followed by plant growth promotion to develop suitable consortia for enhancing BNF in peanut and possibly for other legumes.

Biography

Dipanwita Patra is a distinguished scholar in the field of microbiology. Her research focuses on the intricate interactions between plants and microbes, with a specific interest in bacterial knockouts.

Dipanwita's academic journey began at Vidyasagar University, where she excelled in her studies, earning a gold medal in her BSc in Microbiology and silver medal in her MSc in Microbiology.

Currently, Dipanwita is deeply engaged in her doctoral research at University of Calcutta. Her PhD thesis explores the topic of plant-microbe interactions. One of her notable contributions to the field is her published paper titled "Inter-species interaction of Bradyrhizobia affects their colonization and plant growth promotion in *Arachis hypogaea*." This work highlights the significant impact of microbial interactions on plant health and growth.

Dipanwita's current research delves into bacterial knockouts, aiming to uncover the roles of specific bacterial genes in plant-microbe interactions. Her work holds promise for developing innovative strategies to improve crop yields and sustainability in agriculture

With her impressive academic achievements and ongoing research, Dipanwita Patra is poised to make significant contributions to the field of microbiology and plant sciences.

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Use of Bromelia pinguin Extract Mitigates Glyphosate-Induced Toxicity in Human Cells

Masias-Ambriz Luis Omar[1], Edgar Zenteno[5], Mario Daniel Caba Flores[2], Nereida Montes Castro[3], Israel García Aguiar[3], Rubén Ruiz Ramos[4] and **Carmen Martinez Valenzuela[1]**

[1]Genotoxocology Laboratory, Universidad Autoonoma de Occidente, México
[2]Biochemistry and Molecular Medicine, Universidad Autónoma de Nuevo León, México
[3]Biomedical Sciences, Universidad Autónoma de Occidente, México
[4]Molecular Toxicology Laboratory, Universidad Veracruzana, México
[5]Biochemistry Laboratory, Universidad Nacional Autónoma de México, México

Introduction: Extensive agricultural activity results in significant exposure to pesticides, particularly glyphosate, which has been linked to immunological disorders, including apoptosis and inflammation. Bromelia pinguin, a species from the Bromeliaceae family native to Mexico, is traditionally used in folk medicine for its medicinal properties, including anti-inflammatory effects. This research aimed to evaluate the protective effects of Bromelia pinguin extract on human peripheral blood mononuclear cells (PBMCs) exposed to Faena®, a commercially available glyphosate-based herbicide.

Methods: PBMCs were isolated from healthy donors. Cells were exposed to varying concentrations of glyphosate commercial formulation Faena®, pure potassium glyphosate salts, and Bromelia pinguin extract alone and in co-exposure studies with the extract. Dose-response curves were performed to determine IC50. Cell viability was assessed, and the expression of inflammatory and apoptotic markers, including Caspase-1, NLRP3, and PARP-1, was analyzed.

Results: Exposure of PBMCs to glyphosate salts and Faena® resulted in a dose-dependent reduction of cell viability, with IC50 values of 669.376 µg/mL and 6.555 µg/mL, respectively. Co-exposure of cells with Bromelia pinguin, extract significantly improved cell viability up to 25% in both herbicide-treated groups. Western blot analysis revealed increased levels of

Caspase-1, NLRP3, and PARP-1 after herbicide exposure, indicating activation of apoptotic and inflammatory pathways. Treatment with Bromelia pinguin, extract mitigated the expression of these markers.

Conclusion: The extract of Bromelia pinguin can enhance cell viability and reduce the up-regulation of inflammatory and apoptotic markers in human PBMCs exposed to glyphosate-based herbicides. These results provide new insights into the therapeutic potential of plant-based interventions in pesticide-induced immunological and inflammatory problems.

Biography

Dr. Luis Omar Masias Ambriz: Graduate in Biology from the Universidad de Occidente. He is a collaborating member of the Environment and Health Unit of the Universidad Autónoma de Occidente in the line of monitoring damage due to exposure to pesticides, first graduate of the UAdeO from the multi-site plan of the Master's and Doctorate Program in Medical, Dental and Health Sciences of the National Autonomous University of Mexico and he is currently Doctor in Sustainability from the Universidad Autónoma de Occidente, Guasave Regional Unit

Agricultural Water Management under Water Shortage Stress Conditions: Example of Semi-Arid Konya Plain, Türkiye

Bilal Acar, Nurcan Yavuz and **Duran Yavuz**

Department of Farm Buildings & Irrigation, Faculty of Agriculture, University of Selçuk, Türkiye

The pursuit of maximizing profit per unit of farmed land is a primary concern for agricultural engineers. Approximately 33% of the globe comprises dry and semi-arid climates with irrigated agriculture contributing roughly 40% in these regions. Irrigated agriculture is the predominant water-consuming activity globally, accounting for around 70% of water usage, and exceeding 75% in the semi-arid Konya Closed Basin (KCB). In this ecosystem, economical agro-production for summer crops and even for winter cereals is unfeasible without performing irrigation. In this context, water conservation is an essential need especially in irrigation for KCB. This study is, therefore, relevant to importance of correct agricultural water management for better water productivity in water scant regions such as KCB. Results indicate significant changes in amount, timing and places of precipitation within this basin, particularly over the past 20 years. The depletion of groundwater levels in the basin often leads to environmental issues, such as a rise in the frequency of sinkholes in KCB owing to excessive water extraction from groundwater for irrigation purpose. Crop patterns have to be restructured to prioritize low water consumption crops for the sustainable utilization of water resources. Concerning water conservation, around 25% deficit irrigation is also strongly recommended, as our studies conducted in KCB indicated no significant yield losses for certain field crops such as sugar beet, dry bean, and sunflower, as well as for various vegetables including potato, melon, watermelon, and lettuce. The response of crops to water deficiency at different growth cycles are more meaningful than standard level of deficit water application. Furthermore, the expansion of water-saving irrigation systems might be achieved through effective water management. Finally training courses could be organized for farmers about correct water management at field scales.

Biography

Acar Bilal is currently working as a Professor for Department of Farm Buildings & Irrigation, Faculty of Agriculture, University of Selçuk, Konya, Türkiye. He has around more than 22 years of teaching and research experiences in Irrigation Engineering, Irrigation Systems Design, Water Resources Management, Irrigation Program / Scheduling and Agricultural Water Management particularly in water shortage environments. He has published almost 100 papers and conference proceedings in worldwide, and completed several projects relevant to water resources management or water productivity and water-yield relationships under different irrigation regimes. Some of his publications are in worldwide well-known journals with high impact factor such as Irrigation Science, Agricultural Water Management, Energy, and Horticulture, Environment and Biotechnology. He is currently an International Editorial Review Board of the International Journal of Agriculture and Economic Development (IJAED).

PEERS ALLEY MEDIA

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Inhibiting Potential of Herbal Extracts Cocktail Against *Daboia russelli* and *Bungarus caeruleus Indian Snake Venom*

Sunil S More, Bhavya J, Rachana G K, Abitha J and **Reetha A M**

Department of Biochemistry, School of Basic and Applied Sciences, Dayananda Sagar University, Innovative Campus, India

Background: Snake bites are a major global public health concern; particularly deadly and morbid in tropical areas. India is the world's snakebite hotspot, with 58,000 fatalities and 140,000 morbidities occurring annually. Spectacled cobra (*Naja naja*), Russell's viper (*Daboia russelii*), Saw Scaled Viper (*Echis carinatus*) and Common Krait (*Bungarus caeruleus*) are known to cause the majority of these envenomations, in part due to their near country-wide distributions. Antiserum therapy is the main treatment available, but is associated with several side effects and storage issues, hence a pressing need for alternative therapy with fewer side-effects and also economical.

Methodology: *Phyllanthus acidus* and *Moringa oleifera* plant extracts was evaluated against the Russell's viper and Common krait venom for its anti-venom potential by *in vitro* (enzyme inhibition and pharmacological studies) and *ex vivo* studies using chick embryos.

Results: The aqueous methanolic extracts of the bark (extract alone and cocktail) showed significant inhibiting potential of hyaluronidase, Phospholipase A_2, and protease enzymes. The cogulation and fibrinogenolytic activity was also inhibited. The chick embryos treated with $3xLD_{50}$ of venom induced haemorrhage and the extracts significantly reduced the haemorrhage and increased their survival period as well.

Conclusion: The pressing need of the hour is to obtain an therapy that is affordable with minimal side effects. In this regard, our findings highlight the importance of evaluating the alternative natural therapies as first aid to neutralize the toxicity of the venom.

Biography

Dr. Sunil S. More is presently serving as Professor and Dean in the School of Basic and Applied Sciences, and additionally as Controller of Examinations of Dayananda Sagar University. Currently he is Professor in Biochemistry and has good experience of 21years in teaching and research in the field of Biochemistry. He obtained his Ph.D from KUD in the year 2004 in the field of Biochemistry and Toxinology. His Current research is focusing on inhibition of venom toxicity and characterization of medically important enzymes from microbial and natural sources. He has successfully guided 15 Ph.D students and guided six Mphil Students from Jain University and Dayananda Sagar University. Currently guiding 3 doctoral students at DSU. He is also part of various collaborative research projects with scientists of eminence in research organizations of repute and is also serving as member in various capacities. He is Life member of Society of Biological Chemists, India (SBC-I) and Mycological Society of India (MSI). He has completed 3 research grants from DST-SERB extra mural grant of 91 lakh in the field of Herbal antidote against Indian snake venom toxicity and characterization of medically and industrially important enzymes from microbial and natural sources and has 185 plus research papers published in peer reviewed journals with H index of 30 and 2803 citations and 72I10 index to his publications .

Plant Health—Detecting Leaf Diseases

Fandi Fatima Zahra, Ghazouani Mohamed and **Azouazi Mohamed**

University Hassan II, Morocco

Every year, both the demand for plant products and the population of the planet are growing. Moroccan agriculture is one of the main sectors of activity, which loses every year a percentage of the productivity of its crops due to plant diseases; which requires the protection of crops against plant diseases to meet the growing needs about the quality and caliber of food. So the only solution to decrease the percentage and to increase the productivity is the detection of diseases. From this, we can mention as problematic: depositing a laboratory facility to detect infected leaves, bearing in some countries farmers do not deposit a facility adequate to the recommendation of experts besides consulting an expert is costly and takes more time, hence it is advised to develop a new technology, particularly automated detection of plant leaf diseases, to properly monitor huge crop fields. The objectives of this study is addressing the increasing demand for agricultural products in Morocco, mitigating crop losses caused by diseases and improving agricultural efficiency and sustainability. To achieve these objectives, this research will focus on developing and implementing AI algorithms for automated disease detection in crops. This will involve creating a large and diverse dataset of crop images for training and testing AI models.

Biography

Fandi, F.-Z. . is a PhD student at the University of Hassan II, Morocco. Her research focuses on plant health, specifically on the detection of leaf diseases using AI technologies. She has published four chapters and is currently preparing an article for publication in a scientific journal. Additionally, she has participated in three international conferences, showcasing her expertise in automated disease detection and sustainable agriculture. Her work contributes to improving agricultural productivity by leveraging advanced AI algorithms and innovative data processing methods, addressing the growing global demand for high-quality agricultural products.

Influential Plant in Medicinal Science and Clove: Tiny Buds with Global Fame

Royanama Rahimi, Leila Mohtashami and **Seyed Ahmad Emami**

Mashhad University of Medical Sciences, Iran

In the sixteenth century medicinal plants, which until then had been the monopoly of apothecaries, became a major topic of investigation in the medical faculties universities, where they were observed, transplanted, and grown by learned physicians both in the wild and in the newly founded botanical gardens. Tuscany was one of the main European centres in this new field of inquiry, thanks largely to the Medici Grand Dukes, who patronised and sustained research and teaching, whilst also taking a significant personal interest in plants and medicine. Now, in this poster, we want to focus on the clove plant (primary and secondary metabolites) and its effect in botanical science and pharmacology. Syzygium aromaticum (L.) Merr. & L.M.Perry (Myrtaceae), commonly known as clove, is a median sized tree indigenous to the Maluku Islands in Indonesia but has been cultivated in different countries around the world. Clove is famous as an ancient spice and a culinary plant and its essential oil is widely used as a food preservative, fragrance in perfumes, and anti-inlammatory agent in cosmetics industry. In the Islamic Traditional Medicine (ITM), clove has the potential to treat brain, gastrointestinal, urogenital, ocular, and dental diseases. The pharmacological activities of the essential oils and extracts of clove buds and leaves have been investigated in different *in vitro*, *in vivo*, and clinical studies. The results have presented its anti-oxidant, antiinlammatory, neuroprotective, anti-metabolic syndrome, anti-cancer, and anti-microbial properties, which not only supportthe application of clove in traditional medicine but also suggest new therapeutic aspects as well. In this chapter, we have summarized general information regarding ethnobotany, traditional uses, and the chemical proile of cloves and discussed its therapeutic applications that have been studied until today.

Numerous studies regarding the chemical proile of clove have revealed the presence of phenylpropanoids, monoterpenoids, sesquiterpenoids, chromones, lavonoids, phenolic acids, tannins, and fatty acids. Most of the investigations were performed on the essential oil of buds among which the phenylpropanoid compound, eugenol, was the most dominant. The other dominating components were eugenol acetate and the sesquiterpenoid compound, β-caryophyllene. The essential oil can be extracted from other clove parts like the leaves or stems, but these oils have a different chemical proile in comparison to the essential oil obtained from lower buds.

Biography

Roya Nama Rahimi, was born on 1994-7-24 in Mashhad. She was graduated from Birjand University in the field of pharmacognosy and currently working at Mashhad University of Medical Sciences. Among others: publication of an article in the book Medicinal and Aromatic plants and phytochemical removal and removal of Cr(VI) by plants and experience of working with HPLC, GC-Mass, UV-Viss and Fluorescence devices and three years of work experience in Pararin Pars Pharmaceutical Company as she is a planning manager and have three years of work experience at Gol Aksirpars company in the field of extracting and purifying natural products. Among the interests of reading many recent articles and purifying the effective substance of different plants and cooperating with European companies in the field of medicine, It should be noted that she also have a certificate in emergency medicine.

PEERS ALLEY MEDIA

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Mineral Composition of the Soil, Qualitative Features, Macro and Microelements, Amino Acid Composition of Branded Kyrgyz Rice

Smailov Eltar Ablametovich

Professor of the Department of ENOiMO, International Kyrgyz-Uzbek University named after B. Sydykov, Kyrgyzstan

Favorable soil and climatic conditions of Kyrgyzstan, ecologically clean air and river water collected and flowing from more than 100 sources of mineral waters and saturated with 88 elements of the periodic table, of which 17 are medicinal mineral waters. We have established that the mineral composition of water and soil in the irrigation zone of the Kara-Darya, Zhazy and Zarger rivers differ significantly in their mineral composition. But we can definitely say that the mineral composition of various soils cultivating the same crops largely depends not only on the applied mineral and organic fertilizers but also on the mineral composition of the water of the rivers from which they receive water.

The annual increase in demand for Uzgen rice, as a "brand" of Kyrgyzstan, is based on the preservation of the traditional, developed technology of natural post-harvest steam-thermal processing of rice plants in a stack. And also, the old grandfather's technology of obtaining rice from shala (separating rice from the peel) without the use of mechanical processing, which preserves the most nutritious top layer (aleurone) of rice grains located above the peel.

The results of studies of the influence of soil reaction, the content of nutrients, humus from various cultivation zones of the Uzgen district showed that:

- the soil reaction (Ph) in the rice cultivation zone of the Uzgen district is slightly alkaline from 7.6 to 7.74 Ph (Zhylandy, Don-bulak, Karool a/o) and medium - alkaline from 7.82 to 8.02 Ph (Shoro-Bashat a/o).

- the content of nutrients (N, P, K, Ca, Mg) in soils used for rice crops varies widely depending on the zone and areas: nitrogen (N) by 3.3 times (low 0.083-0.130; average 0.192 - 0.206, high

0.236 - 0.274%), phosphorus (P) from 2 to 26.1 mg/kg by 13 times, potassium from 61 to 173 mg/kg by 2.8 times, calcium (Ca) by 6.27 times from 5211 to 32677 mg/kg, magnesium (Mg) by 6.08 times from 237 to 1442 mg/kg. - by humus content: low was 2.76% (Don-bulak agro-industrial complex) and very high 8.005% (Shoro-Bashat agro-industrial complex), the soils of Shoro-Bashat agro-industrial complex contain humus from 5.199 to 8.005%.

These studies showed that there is no pattern in the influence of soil reaction (R-n), nutrient content and humus on the quality characteristics of rice. In this case, the variety of cultivated rice and irrigation water are important.

In the Uzgen region, 3 types of rice are obtained from one variety (1 - "White" (beige); 2 - "Zarcha" (semi-red - brown, light brown); 3 - "Dasta saryk" - (full-red-brown, dark brown), the famous Uzgen rice differing from each other in their unique taste and quality.

The world standard for rice, by protein content is 6%, artificial rice 8% protein, and our studies have shown that in Uzgen rice the protein content, depending on the variety and soil conditions, is 10-13%, and the husk contains up to 9% proteins. Depending on the technology of preparing sheaves of grains of the shaly located in stacks before threshing, internal changes in the chemical composition of rice occur, microelements located in the husk pass into rice. This occurs in the process of natural post-harvest steam-thermal treatment (fermentation), rice plants in a stack, which leads to an increase in polysaccharides, ash and especially a sharp increase in the content of pectin substances and hemicellulose in rice grains. Naturally, the content of protein and microelements in rice increases. We have received a patent of the Kyrgyz Republic for the optimal method of preparing sheaves of the grain of the shaly for threshing. The process of natural steam-thermal treatment depends on the condition of the rice plant, temperature and humidity of the outside air. And peasant subjects cultivating rice carry out natural steam-thermal treatment depending on the duration of the stay of the sheaves of the rice plant in the stack in days: 3 days "beige"; 7 days "zarcha"; 10 or more days "dasta", without taking into account the condition and parameters of the outside air. Therefore, sometimes rice is obtained with the smell of decay, due to the lack of control of the process modes. In this regard, subjects cultivating rice, keep it in the stack for 3-4 days and the rice is beige. And on the market, the price of "dasta" is 2 times higher than "beige", therefore, to obtain the type of rice "dasta" they add dyes that are washed off, while the quality is reduced, causing irreparable harm to the "brand" of Kyrgyzstan. Based on the conducted field experimental studies, we have developed a design scheme of an experimental setup with automatic control of the steam-thermal treatment process. Depending on the duration of the presence of the grain of rice in the stack, oligosaccharides, polysaccharides, pectin substances and hemicellulose and ash increase. Here, it is especially worth noting the increase in the ash content, which indicates an increase in the content of microelements in the rice "dasta" by 27% compared

to "beige" which was in the stack for only 3 days.

Biography

Smailov Eltar Ablametovich, born in 1952, Uyghur by nationality, was born in the city of Shiho, PRC. Graduated from Secondary School No. 1 in Uzgen in 1970. Higher education, graduated (1970-1975) from the Andijan Institute of Cotton Growing, faculty of agricultural mechanization, from 1979-1983 he studied in the graduate school of the All-Russian Research Institute of Tobacco and Makhorka (Krasnodar, Russia), 1985 - Candidate of Technical Sciences, specialty: 05.20.01 - mechanization of agricultural production. 2003 - Doctor of Agricultural Sciences in the specialties: 05.20.01 - technologies and means of mechanization and 06.01.09 - crop production. 2006-2009 - Member of the dissertation council (D.06.09.388) for the defense of doctoral dissertations. 2010 - Associate Professor, in the direction of "Mechanization and automation". 2010 - Professor in the direction of "Technology". 2017 - Academician of the Engineering Academy of the Kyrgyz Republic in the direction of Agriculture, light and food industry and Environmental Protection. 2018 - Academician of the Russian Academy of Natural Sciences (RANH). 2014-2016 - Chairman of the interdepartmental dissertation council K.03.14.492 in biological sciences at OSTU. From 2019-2022 Chairman of the doctoral dissertation council D 06.20.605 in biological sciences. Since 2023 Chairman of the Doctoral Dissertation Council in technical sciences. Has more than 300 scientific papers, incl. 17 monographs, 5 teaching aids, 3 recommendations for production with the stamp of the Ministry of Agriculture and Mechanics of the Kyrgyz Republic, 4 author's certificates for inventions of the USSR, 17 patents of the Kyrgyz Republic and more than 20 rationalization proposals. Prepared 3 doctors of science and 12 candidates of science, scientific supervisor of 8 postgraduate students and scientific consultant of 5 doctoral students. Excellent worker of education of the Kyrgyz Republic (2006), Excellent worker of agriculture of the Kyrgyz Republic (2013), Honorary title "Founder of the scientific school" (Russia, 2018), awarded the Order of Peter the Great "The Unprecedented Happens" (Russia, 2018), awarded the A. Nobel medal for inventive activity Russia, RAE, (2020), awarded the "Gold Medal of V.I. Vernadsky" (2022) "Honorary Engineer" of the Engineering Academy of the Kyrgyz Republic (2022). 07.2024-PRC, appointed as an expert to the Central Asian Base for Joint Training of International Highly Qualified Personnel.

Ecological Significance and Biotechnological Applications of Ulva lactuca: A Comprehensive Review of this Versatile Green Macroalga

Övgü GENCER

Ege Üniversitesi, Su Ürünleri Fakültesi, Yetiştiricilik Bölümü, Türkiye

The green macroalga Ulva lactuca, commonly known as sea lettuce, has gained significant attention in recent years due to its remarkable adaptability and diverse applications in both ecological and biotechnological contexts. This study presents a comprehensive analysis of U. lactuca's ecological role in aquatic ecosystems and its potential in various biotechnological applications. Our research synthesizes current literature on the species' rapid growth characteristics, nutrient uptake efficiency, and its role in marine food webs. The findings highlight U. lactuca's potential as a sustainable resource for biofuel production, human nutrition, and bioremediation of coastal waters. Through extensive literature review and meta-analysis, we demonstrate that U. lactuca exhibits exceptional capacity for removing excess nutrients from aquatic environments, particularly nitrogen and phosphorus compounds, making it an excellent candidate for integrated multi-trophic aquaculture systems. The species also shows promising results in heavy metal biosorption and organic pollutant removal, suggesting its potential use in wastewater treatment applications. Furthermore, we examine its remarkable ability to serve as a bioindicator for environmental monitoring and its promising applications in the pharmaceutical industry, where its bioactive compounds show antimicrobial, anti-inflammatory, and antioxidant properties. The study also addresses the challenges and opportunities in large-scale cultivation of U. lactuca, considering both environmental and economic perspectives. Particular attention is given to optimizing cultivation conditions, including light intensity, temperature, salinity, and nutrient availability, which significantly influence biomass productivity and biochemical composition. Our findings suggest that this versatile species could play a crucial role in addressing various global challenges, from food security to environmental sustainability. The review concludes by identifying key research gaps and future directions for maximizing the potential of U. lactuca in both ecological restoration and biotechnological applications,

emphasizing the need for standardized cultivation protocols and improved processing technologies.

Biography

Dr. Övgü Gencer is a researcher at Ege University's Faculty of Fisheries, Aquaculture Department. With a PhD focusing on blue crab (Callinectes sapidus) egg and larval stage development, she brings extensive expertise in aquaculture systems, marine species cultivation, and innovative research techniques. On the other hand she completed her doctoral thesis in Prof. Chung Laboratuary at University of Maryland Center for Environmental Science (UMCES), Baltimore, USA.

Dr. Gencer has conducted significant research at the University of Maryland Center for Environmental Science (UMCES), Baltimore, USA and is currently involved in cutting-edge projects including EU COST Project SeaWheat and Astaxanthin extraction.

Her research spans areas of blue crab cultivation, microalgae productivity, and nanotechnology applications in aquaculture, with multiple international peer-reviewed publications demonstrating her comprehensive approach to sustainable marine research.

Additionally, Dr. Gencer is the founder and R&D Director of VG Beautys Health and Cosmetic Products Industry and Trade Ltd. Co., a cosmetics company dedicated to developing marine-based dermocosmetc products. She leads all research and development activities from her specialized microbiology laboratory, focusing on translating marine biotechnology innovations into advanced skincare solutions.

Thigmomorphogenesis in Woody Plants

Frank W. Telewski

Department of Plant Biology, Michigan State University, USA

Plants perceive and respond to mechanical loading, especially imposed by wind as first observed by Theophrastus ca 300 B.C.E. and experimentally proven by Knight in 1803. Jaffe coined the term thigmomorphogenesis in 1973 to describe the response as a way for plants to be protected from “high winds and moving animals”. Since then, numerous studies have reported on the details of the sensory pathway, gene expression and metabolic response, as well as the characterization of anatomical, morphological and biomechanical modifications in plant structure. These modifications confer acclimation *via* resistance and resilience against future mechanical loading. The changes are most readily observed in arborescent plants. In general, trees growing under windy conditions exhibit a reduction in height growth with an increase in radial growth, specifically in the direction of loading or bending of the trunk. The new wood formed by the vascular cambium is modified in such a way as to increase the absorption of bending energy by the trunk while increasing stiffness to retain a vertical orientation of the stem. A reduction in leaf area along with the formation of a more compact crown, which can be streamlined under more extreme exposure, results in a reduction in drag, shedding the wind energy away from the tree. This presentation will include a brief review of the development of our understanding of thigmomorphogenesis with a focus on woody plants and secondary growth arising from the vascular cambium of conifers and angiosperms. I will focus on how the change in morphology and anatomy influences the biomechanics of tree strength under conditions of mechanical loading and the potential for trait selection for wind tolerant trees.

Biography

Dr. Telewski earned his MA from Montclair State College, MS from Ohio University and his Ph.D. at Wake Forest University with Dr. Mark Jaffe. He joined the faculty of the Laboratory of Tree Ring Research at the University of Arizona in 1983. In 1990, he became Director of the Buffalo and Erie County Botanical Gardens and was an adjunct professor at the University of Buffalo and Buffalo State University. He moved to Michigan State University in 1993 where he joined the faculty of the Department of Botany and Plant Pathology and directed the W.J. Beal Botanical Garden while continuing his research on thigmomorphogenesis. Frank published over 70 scientific articles including on the Beal Seed Viability study and is recognized as a global expert on the effects of wind on trees.

ADV.PSPB 2025

DAY 02

WORLD CONGRESS ON

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

AMSTERDAM, NETHERLANDS

MARCH 31-APRIL 01, 2025

SPEAKER TALKS

High Hydorstatic Pressure for the Development of Functional Bioactives from Plant Sources

Chong-Tai Kim

R&D Center, Ilshin T.H.E./Sokcho Bio, Republic of Korea

High hydrostatic pressure (HHP) processing has been used in food and bio-material industry in order to reduce microbial counts, and has been shown to affect enzyme activity and food product functionality since covalent bonds are not affected by pressure. From biotechnological point of view, enzyme processes at high temperature often provide considerable merits such as increased solubility and reaction rate, and reduced microbial contamination and solution viscosity, which is evidenced by the fact that most industrial enzyme processes are conducted at elevated temperatures. In this context, the maintenance of thermal stability of enzymes seems to be very important to conduct enzymebased food processes that comprise hydrolysis, synthesis and biotransformation.

One important issue in enzyme technology that gains recent attention is the enzyme reaction at high pressure. It has been shown that stability and activity of several enzymes are increased at specific conditions, and catalytic behavior is modified by changing rate-limiting step or modulating enzyme selectivity.

A combination of high hydrostatic pressure and enzymatic hydrolysis (HHP-EH) is a relatively new extraction method for bioactives from plant materials. High pressure 100 MPa is routinely used for food application such as extraction and hydrolysis of plant or animal sources as an alternative to high-heat treatment. High pressure of more than 300 MPa inactivates bacteria, yeast, or viruses at ambient temperature within several minutes. The application has been commercially available for many years even for industrial-scale processes.

In this lecture, the application for HHP-EH in plant materials have introduced. Total saponins, panaxadiols, and metabolites from fresh ginseng roots increased by the HHP-EH. The yield

of total saponin from the HHP-EH with cellulase, significantly higher than the yield from the HHP-EH with β-amylase. HHP-EH with Pectinex Be XXL and Ultra color highly increase the quality characteristics of mulberry fruits such as soluble solid content, yield, flavonoid content, and phenolic acid contents. Decrease in rutin content and increases in hyperoside and quercetin contents were found through HPP-EH, which may be the result of the two-step deglycosylation of rutin by pectinase activity. The extraction yield of mulberry fruits was maintained during HHP-EH from 0–36 hrs, and its bioactive compound profile was variously changed. Therefore, there is a new clues as to how the HPP-ET may promote changes in the extraction yield and bioactive substance profile of mulberry fruits and suggest the potential for use of natural materials based on mulberry fruit extracts.

Biography

Dr. Chong-Tai Kim is currently a director in the R&D Center of Ilshin T.H.E./Sokcho Bio Co., Seoul, Republic of Korea. His prior research area include in nanofabrication of functional ingredient and a combination of high hydrostatic pressure and enzymatic hydrolysis process, and reactive extrusion of food and bio-material. He received a PhD in Bioprocess Engineering at Myongji University in Seoul, Republic of Korea with a thesis entitled “Analysis of extrusion process for functional dietary fiber production”. He joined Korea Institute of Science and Technology in Seoul, Republic of Korea as a food process engineer. He also joined Korea Food Research Institute in Seongnam, Republic of Korea as a head of bioprocess engineering team for 30 years. He worked collaboratively with researcher at Southern Regional Research Center, United States Department Agriculture, New Orleans and at the University of Tennessee, Knoxville, Tennessee, USA. He has published over 150 research articles and has 15 patents. He commercialized a beverage product of protein and amino acid produced from animal source by HHP-EH process in Republic of Korea.

The Effects of Climate Change on the UAE and its Agricultural Sector

Ahmed Talabani

Shiekh Hamdan bin Rashid Al Maktoum Foundation for Medical and Educational Sciences, UAE

This paper discusses the effects of climate change on the United Arab Emirates (UAE) and the Emirati agricultural sector. The paper aims to demonstrate the impact of climate change on the agricultural sector and food security in the UAE, with a particular focus on the water sector, given the interconnectedness of water, energy, and food. The paper will also discuss the initiatives taken by the UAE government, demonstrating the flexibility and success of the country's agricultural sector in addressing climate change.

The paper's scope is from a diplomatic and security perspective; therefore, discussing the water-energy-food nexus adds a security element to the paper. Additionally, the timeframe of this paper is from 2020 to 2024, which includes COVID-19, the war in Ukraine, and the Israel-Gaza war. These events matter in discussing the agricultural sector and the great disruption that occurred to the sealines of communications regarding the United Arab Emirates, amongst others. Food product and goods prices have risen, significant geopolitical shifts have occurred, new blocs and alliances have formed, and global tensions have escalated.

The development of the paper on the previously discussed topics will determine the research results, but the methods employed will shape them. This will be determined through a combination of research methodologies. The paper will include graphs and figures. Leading to the conclusion of the paper, which must contain an answer to the following questions: From an international relations perspective, how flexible and successful is the UAE in addressing the numerous challenges affecting its agricultural sector due to the effects of climate change? What are the threats to the UAE food security? Why was the UAE so successful and resilient during the COVID-19 pandemic?

Biography

Ahmed Talabani is an accomplished scholar and emerging leader in the field of international relations and diplomacy. He holds a Bachelor's degree in International Relations from the University of Warsaw, where he demonstrated exceptional academic prowess and a keen interest in global affairs. Following his undergraduate studies, Ahmed received a full scholarship for a Master's degree in Diplomacy at the American University in the Emirates in Dubai, specializing in security and global studies. He graduated at the top of his class, reflecting his dedication to academic excellence.

During his academic journey, Ahmed's passion for research and intellectual inquiry led him to receive recognition for his outstanding contributions. He was awarded the Best Paper in the panel of International Affairs and Economic Warfare at the 1st International Arabian-Gulf Security Conference. Additionally, Ahmed actively participated in various conferences and research competitions, including the Community Leaders Conference hosted by the Arabic-European Center for Human Rights and International Law, where he was honoured as an ambassador of peace and goodwill.

He currently is a main researcher at the Shiekh Hamdan bin Rashid Al Maktoum Foundation for Medical and Educational Sciences. Through this role, Ahmed combines his theoretical knowledge with practical experience, contributing valuable insights to both academia and the professional sphere.

PEERS ALLEY MEDIA

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Hydroponic Cultivation Enhances Morpho-Physiological Traits and Quality Flower Production in Three Cultivars of French Marigold (*Tagetes patula* L.)

Bhavya Bhargava[1,2], Ujala[1], Diksha Sharma[1], Mahinder Partap[1,2] and **Ashish R. Warghat[2,3]**

[1]Floriculture Laboratory, Agrotechnology Division, Council of Scientific and Industrial Research (CSIR)-Institute of Himalayan Bioresource Technology (IHBT), India
[2]Academy of Scientific and Innovative Research (AcSIR), India
[3]Biotechnology Division, Council of Scientific and Industrial Research (CSIR)- Institute of Himalayan Bioresource Technology (IHBT), India

In soil-less agriculture, hydroponics is recognized as a promising farming system for producing uniformly high-quality plant material in significantly less time. This investigation, for the first time, examines the effects of different cultivation conditions—open-field, poly-house, and hydroponic on morpho-physiological traits, phenolic content, and essential oil components in three French marigold cultivars (scarlet red, orange, and yellow) of *Tagetes patula* L. The results demonstrated that hydroponic systems produced the highest plant height, number of secondary branches, number of flowers, photosynthesis rate, stomatal conductance, and transpiration rate compared to other conditions. However, the open-field conditions yielded the highest content of gallic acid (0.82 mg/g dry weight), syringic acid (3.98 mg/g dry weight), epicatechin (0.48 mg/g dry weight), p-coumaric acid (7.28 mg/g dry weight), protocatechuic acid (0.59 mg/g dry weight), ferulic acid (2.58 mg/g dry weight), and luteolin (8.24 mg/g dry weight). Under hydroponic conditions, higher levels of vanillic acid (0.43 mg/g dry weight), caffeic acid (0.49 mg/g dry weight), and quercetin (0.92 mg/g dry weight) were observed. Additionally, a total of nineteen volatile components were identified in the essential oil of the different marigold cultivars, with the major components being (-)-caryophyllene oxide, trans-β-caryophyllene, trans-geraniol, 3-methyl-benzyl alcohol, and 2,2':5',2"-terthiophene. The volatile component percentage ranged from 70.85% to 90.54% in open-field conditions, 59.03% to 77.93% in poly-house conditions, and

68.78% to 89.41% in hydroponic conditions. In conclusion, this research highlighted that hydroponic cultivation resulted in superior morpho-physiological performance and higher flower production per plant. However, open-field conditions maximized phenolic content and volatile components. The study concludes that hydroponics presents a significant potential strategy for quality flower production in *T. patula*.

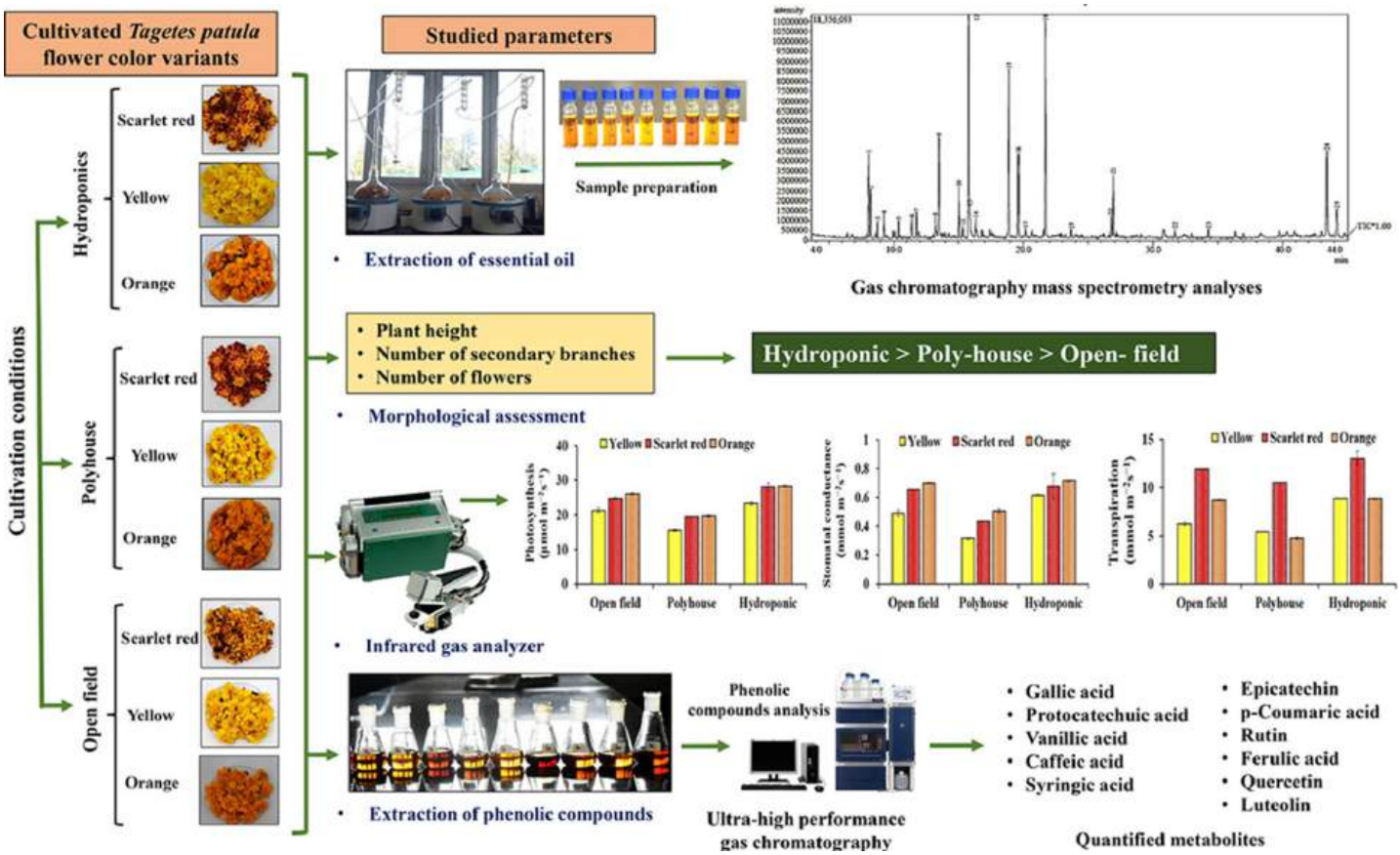

Fig. 1. Graphical representation of studies on Hydroponic cultivation of *Tagetes patula* L.

Table 1. GC–MS based analysis of volatile oil components in three cultivars (marigold scarlet red, marigold orange, and marigold yellow) of French marigold (*Tagetes patula* L.) under different cultivation conditions.

GC–MS based analysis of volatile oil components in three cultivars (marigold scarlet red, marigold orange, and marigold yellow) of French marigold (*Tagetes patula* L.) under different cultivation conditions.

Volatile components	Relative retention indices*	Open field cultivation			Poly-house cultivation			Hydroponic cultivation		
		Yellow flower	Scarlet red flower	Orange flower	Yellow flower	Scarlet red flower	Orange flower	Yellow flower	Scarlere flower	Orange flower
		Peak area percentage								
dl-Limonene	1022	0.21	5.17	4.55	0.10	4.16	4.23	0.10	5.05	4.39
Trans-β-ocimene	1037	0.22	1.79	4.43	0.12	1.77	4.06	0.12	2.80	4.22
Di-hydrotagetone	1090	0.33	1.45	1.96	0.21	1.01	1.05	0.23	0.97	1.18
3-methyl-benzylalcohol	1104	3.69	2.29	11.44	3.01	0.31	7.11	3.11	2.33	9.31
L-Linalool	1109	1.62	1.11	0.87	1.45	1.26	0.97	0.62	1.02	0.88
1,8-menthadien-4-ol	1176	0.56	1.49	1.55	0.47	2.33	1.33	0.33	1.12	1.57
Ocimenone	1203	1.57	3.01	2.12	1.44	2.89	1.88	1.35	3.32	1.99
trans-Geraniol	1220	16.89	19.88	16.98	12.21	14.34	11.34	14.94	16.63	14.73
Citral	1234	2.18	0.59	1.54	2.03	1.66	0.66	2.06	0.97	0.79
Piperitenone oxide	1346	1.16	5.77	0.02	1.06	4.55	3.57	1.01	5.87	3.12
Neryl acetate	1367	1.75	0.87	0.06	1.33	0.49	0.02	0.64	0.47	0.03
Trans-β-caryophyllene	1422	12.88	17.19	26.06	10.33	13.03	21.45	10.72	15.35	26.65
Germacrene-D	1476	0.35	0.38	1.14	0.11	0.56	0.92	0.23	0.44	1.02
1H—Cycloprop[e] azulen-7-ol	1532	3.22	1.33	2.04	2.86	0.69	1.35	3.18	1.56	2.44
(-)-Caryophyllene oxide	1583	30.54	6.51	9.98	24.56	7.08	11.67	30.61	9.12	11.86
Geranyl hexanoate	1656	3.39	1.19	2.29	3.39	2.17	2.45	1.31	1.09	2.20
2-Pentadecanone	1689	2.48	0.68	0.82	0.19	0.48	0.98	2.19	0.56	0.89
Neryl (*S*)−2-methylbutanoate	1789	1.03	0.14	2.69	0.41	0.25	2.89	0.12	0.11	2.14
2,2':5',2''-terthiophene	2232	13.97	3.26	3.46	13.97	2.87	3.19	10.79	3.26	3.54
Total identified (%)		84.07	70.84	90.54	65.28	59.03	77.93	72.87	68.78	89.41

*Relative retention indices to C9 to C24 n-alkane mixture.

Biography

Dr. Bhavya Bhargava is presently working as Sr. Scientist (Floriculture), at Department of Agrotechnology, Council of Scientific & Industrial Research- Institute of Himalayan Bioresource Technology, Palampur, Himachal Pradesh, India. He has a Ph.D. in Horticulture (Floriculture and Landscaping) from Dr. Y S Parmar University of Horticulture and Forestry, Nauni, Solan, Himachal Pradesh, India (2013). As a faculty of Agrotechnology, he is involved in teaching of different courses and also guiding the PhD students. He has published 36 research/ review papers in various journals of International and National repute, contributed 14 book chapter, several popular articles, and 8 institutional publications. He has attended 7 (International and National) conferences. He is leading various projects as Principal Investigator funded by various National funding agencies like CSIR, DST, MSME, MOEF&CC etc. He has delivered various lectures related to floriculture on TV and radio. Dr. Bhargava has received many awards from various societies and scientific organizations for his scientific contribution.

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

An Investigation of Tufa Microbialites in the Terrestrial Ecosystem of Adilcevaz (Bitlis) According to the Conservation Approach

Firat Çiltepe[1] and **Alper Uzun**[2]

[1]Department of Geography, Institute of Social Sciences, Balıkesir University, Türkiye
[2] Faculty of Science and Art, Department of Geography, Balıkesir University, Türkiye

Due to their rarity, scientific, and aesthetic value, or being a part of an important geological process, some natural formations (like calc tufa) on Earth have to be protected. While the formation and development processes of the microbialites in Lake Van continue, the microbiolites in Adilcevaz remained outside the lake and became fossils. These structures are arranged approximately 200 m wide and 800 m long, reaching heights of 6 m in places. In this study, the area where the Adilcevaz tufa microbialites, surviving to the present day as a remnant of the level change stages of Lake Van as well as their aesthetic appearance and scientific importance, was evaluated according to the conservation approach. Phenomenology research design, one of the qualitative research designs, was used in the study. Although the research is basically a field study, secondary sources were used and face-to-face interviews were conducted. The semi-structured interview technique, one of the qualitative research techniques, was used for the interviews that were held with the participants on the basis of pre-prepared questionnaire forms. Following the interviews, the data were evaluated with descriptive and interpretive analyzes. As a result of the field observations and interviews, the area was suggested to be evaluated as a "natural monument" to protect it and carry out activities for tourism purposes. It is understood that the area has an important potential in terms of ecotourism, and should be proposed to be included in the UNESCO World Heritage List together with the Lake Van microbialites, the largest microbialites in the world.

Biography

Firat Çiltepe was born and raised in Bitlis, Turkey. He studied Geography at Balıkesir University for his undergraduate degree. He also completed his master's degree at the same university and currently he is pursuing a PhD there. At the moment, he is working as a Geography teacher at a private college.

World Congress on
ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY
March 31-April 01, 2025 | Amsterdam, Netherlands

Molecular Diagnosis, Characterization and Successful Development of Integrated Management Strategies for *Tomato leaf Curl New Delhi Virus* (F: Geminiviridae G: *Begomovirus*) in Ridgegourd (*Luffa Acutangula* L.)

Mahesha B[1], Samuel D.K[1], Varalakshmi B[2], Ankit U.M[3] and **Nagesha N[3]**

[1]Division of Crop Protection, ICAR-Indian Institute of Horticulture Research, India
[2]Division of Vegetable Crops, ICAR-Indian Institute of Horticulture Research, India
[3]Department of Agricultural Biotechnology, GKVK, University of Agricultural Sciences, India

Ridgegourd (*Luffa acutangula* L.) is one of the important vegetable crops in the cucurbitaceous family, widely cultivating across the globe. Among the biotic stresses *Tomato leaf curl New Delhi virus* (ToLCNDV) (F: Geminiviridae, G: *Begomovirus*) is designated as predominant one both in India and the world with an incidence of 30-100%. In the current investigation conducted the field survey across selective districts of Southern States of India, collected the ToLCNDV symptomatic leaves, fruits of ridgegourd and detected the causal organism through Transmission Electron Microscopy, Immuno strip and PCR methods with both virus and genus specific primers. Further, ToLCNDV being the naturally transmitted by whiteflies, *Bemisia tabaci* (F: Aleyrodidae, O: Hemiptera), we discovered the alternative transmission methods and its host ranges. The investigative results revealed that virus is easily transmits through mechanical sap on ridgegourd. Further, easily transmits on spongegourd, cucumber, bottlegourd, watermelon and muskmelon indicating as its host ranges. In the resistant breeding program identified, the two elite lines (IIHR-Sel-1 and IIHR-137) showed delayed infections with asymptomatic nature up to 70-75 days after sowing under natural field conditions. Developed the gene construct harboring ToLCNDV-CP gene (coat protein) to achieve transgenic resistance against ToLCNDV in ridge gourd. Further, developed the effective and robust IDM strategies for ToLCNDV infections in ridgegourd. However, border cropping with two rows of maize, usage of reflective mulches, installation of yellow/blue sticky traps, application of Arka Microbial Consortium (20g/lit), alternate sprays of Neem Oil (2ml/lit) and Arka Vegetable Special (3g/lit) and need based sprays of Fipronil and Thiomethaxam based compounds were reduced the disease incidence to the

maximum extents (90-95%). These results were consistent and successfully demonstrated consecutively for six years under filed conditions.

Biography

Dr. Mahesha B was born on 05.05.1982 at Mandya District, Karnataka, India. He graduated in BSc.(Agriculture) at College of Agriculture, V.C.Farm, Mandya University of Agricultural Sciences (UAS) in Bangalore. He completed the post-graduation in MSc (Agri.) Plant Pathology at UAS Dharwad, Karnataka in India and he obtained Doctoral degree from UAS Bangalore with Senior Research Fellowship from Indian Council of Agricultural Research (ICAR), New Delhi, India from 2007-2010. He Immediately after doctoral thesis submission, joined to Agricultural Research Service (ARS) as Scientist at Indian Institute of Vegetable Research, Varanasi, Uttar Pradesh, India from 2010-2015. Then he joined to Indian Institute of Horticulture Research, Hesaraghatta, Bangalore, Karnataka from 23.12.2015 to till date. From doctoral degree to till date he involved in Vegetable Virology research programs with special emphasis on molecular diagnosis, characterization, host-plant resistance, virus-vector relationship, resistant breeding programs, seed borne viruses and he successfully developed the strategies for integrated management of viral diseases in cucurbits and solanaceous hosts. He awarded with many DST/DBT/RKVY funded projects on Tospovirus, Begomovirus, seed borne viruses and various workshops, training programs on cucurbit virology.

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Ethylene Mediates Dichromate-Induced Inhibition of Primary Root Growth by Altering AUX1 Expression and Auxin Accumulation in Arabidopsis *thaliana*

Abdul Wakeel[1], Imran Ali[1,2], Sakila Upreti[1], Azizullah Azizullah[3], Bohan Liu[1], Ali Raza Khan[1] and **Linli Huang[1]**

[1]Zhejiang Key Lab of Crop Germplasm, Department of Agronomy, College of Agriculture and Biotechnology, Zhejiang University, China
[2]Department of Biotechnology and Genetic Engineering, Kohat University of Science and Technology, Pakistan
[3]Department of Botany, Kohat University of Science and Technology, Pakistan

The hexavalent form of chromium [Cr(VI)] causes a major reduction in yield and quality of crops worldwide. The root is the first plant organ that interacts with Cr(VI) toxicity, which inhibits primary root elongation, but the underlying mechanisms of this inhibition remain elusive. In this study, we investigate the possibility that Cr(VI) reduces primary root growth of Arabidopsis by modulating the cell cycle-related genes and that ethylene signalling contributes to this process. We show that Cr(VI)-mediated inhibition of primary root elongation was alleviated by the ethylene perception and biosynthesis antagonists silver and cobalt, respectively. Furthermore, the ethylene signalling defective mutants (ein2-1 and etr1-3) were insensitive, whereas the overproducer mutant (eto1-1) was hypersensitive to Cr(VI). We also report that high levels of Cr(VI) significantly induce the distribution and accumulation of auxin in the primary root tips, but this increase was significantly suppressed in seedlings exposed to silver or cobalt. In addition, genetic and physio-logical investigations show that AUXIN-RESISTANT1 (AUX1) participates in Cr(VI)-induced inhibi- tion of primary root growth. Taken together, our results indicate that ethylene mediates Cr(VI)- induced inhibition of primary root elongation by increasing auxin accumulation and polar trans- port by stimulating the expression of AUX1.

Biography

Dr. Abdul Wakeel Umar is a distinguished scientist specializing in biotechnology and molecular biology. He holds a Ph.D. in Agromolecular Biotechnology from Zhejiang University, China, an MPhil in Biotechnology from Quaid-I-Azam University, Pakistan, and a BS in Biotechnology and Genetic Engineering from Kohat University of Science and Technology. Currently, he is an Associate Distinguished Research Fellow at Beijing Normal University, China.

Dr. Umar has also served as a Brain Pool Invited Scientist at the Korea Research Institute of Bioscience and Biotechnology and an Outstanding Postdoctoral Research Fellow at Henan University, China. His expertise includes hormonal crosstalk, secondary metabolites biosynthesis, DNA/RNA extraction, gene expression analysis, and plant tissue culture. He has received notable grants, including from the National Research Foundation of Korea, and has published extensively in peer-reviewed journals. His contributions to the field reflect his dedication and innovative approach to scientific research.

World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

March 31-April 01, 2025 | Amsterdam, Netherlands

Novel Sustainable Ideas, Praxis on Residential, and Green-Areas by the Henri Prost's Istanbul Development Plans

Hülya Coskun

Faculty of Architecture, Mimar Sinan Fine Arts University, Türkiye

While discussions on sustainability continue in academic circles around the world, Istanbul remained unconcerned to this issue for many years. The city continued the problems due to vastly overpopulated and rapidly developed with immigration problems in years. However, the recent Covid-19 has been a milestone in awareness on this issue. Although the subject of sustainability is a relatively new idea, the old planning methods can be included as well as new and innovative solution and proposals. Furthermore, along the new planning approaches also some of the old city and housing planning methods recently come-back. In this context as prominent architect-planner and the founder of *l'urbanisme* (urbanism) theories 20th century Henri Prost's Istanbul Development plans prepared for the city's modernization were vague and controversial many years. The reason of the H. Prost's Istanbul plans has always been keep popularity in every period although product of the doctrinal structure of the French Urbanism School (*l'ecole*) he was affiliated, and its effects have continued from the 1950s to the 70s-80s and until today. Lately, the system of the urban planning matrix changed and 20th Century car-based urban planning of the CIAM's school evolved to the human-oriented and no-car zone concept with the climate-based discourse after the 1980s, and recent Covid-19. The architect-planners like H. Prost, who approached the problems of the 20th century cities with old planning tools with "realistic" ideas using real city maps have recently been significant again for future planning. This old rhetoric started the new idea based on to conduct a new study on sustainable praxis of H. Prost's Istanbul Development plans as a research object. Consequently, findings achieved after the examinations on Prost Development plans known as modernization for the city's future with upper-urban scale urban elements, opening roads, green-areas, parks. In the lower-architectural scale they reflected his architectural background implicitly included the blocks, building-blocks surrounded by the road's inferences and propositions old and new settlements.

INDEX

ADV.PSPB 2025

ADV.PSPB 2025

PEERS ALLEY MEDIA

ADV.PSPB 2025

2025

Peers Alley Media
1126 59 Ave East, V5X 1Y9, Vancouver BC, Canada
WhatsApp No: +1 (506) 909-0537

BOOKMARK YOUR DATES

2nd World Congress on

ADVANCES IN PLANT SCIENCE AND PLANT BIOLOGY

MARCH 2026 | LONDON, UK