Abstract Book

3rd World Summit on

Global Agri & Food Safety Congress

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GLOBAL AGRI & FOOD SAFETY CONGRESS

February 26–27, 2026 | Amsterdam, Netherlands

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Welcome Message:

Welcome to the Global Agri & Food Safety Congress 2026, a premier international forum where thought leaders, researchers, policymakers, and industry innovators come together to shape the future of agriculture and food safety.

This Congress offers a unique opportunity to discover ground-breaking research, engage with cutting-edge scientific and technological advances, and explore practical innovations that are redefining how food is produced, protected, and delivered across global value chains. From sustainable farming systems and precision agriculture to food quality assurance, regulatory frameworks, and risk management, the program is designed to address the most pressing challenges facing the agri-food sector today. Through keynote presentations, technical sessions, panel discussions, and networking opportunities, participants will gain insights that inform decision-making and drive meaningful change.

Beyond knowledge sharing, the Congress functions as a catalyst for high-impact collaboration. It brings together leading experts to foster cross-disciplinary dialogue and partnerships that accelerate the translation of research into real-world solutions. Through one of these engagements, I, despite being new to the smart farming domain, successfully established a significant partnership with a government body to advance my startup's work in smart farming and new farmland development.

We are honored to welcome you to this global gathering and look forward to your contributions as we work together to advance safer, more resilient, and more sustainable agri-food systems for the future.

Conference Chair:

Tet Yeap

University of Ottawa, Canada

We would like to express our sincere gratitude to **Dr. Tet Yeap, University of Ottawa, Canada**, for serving as the Conference Chair.

His valuable guidance, leadership, and academic insight have played a significant role in shaping the scientific program and ensuring the success of the conference. We deeply appreciate his time, dedication, and continued support in bringing together researchers and professionals for meaningful knowledge exchange and collaboration.

Core Committee

- Shuisen Chen, Guangzhou Institute of Geography, China
- Filip van Noort, Wageningen University and Research, Netherlands
- Sanem Argin, Co-founder and CEO of Kiana Agriculture, Netherlands
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- Uqbah Iqbal, Managing Director of Pitas Agriculture, Malaysia
- Huseyin Bekir Yildiz, KTO Karatay University, Turkey

Food Security through Machine Learning, Sustainable Precision Farming, and New Arable Land Creation

Tet Yeap* and Iluju Kiringa

School of Electrical Engineering and Computer Science, University of Ottawa, Ottawa, Canada

Abstract

As the global population approaches 10 billion by 2050, ensuring food security has become one of humanity's most pressing challenges. This talk presents ongoing research at the Area X.O Smart Farm in Ottawa, Canada, focusing on data-driven and sustainable solutions to increase agricultural productivity. Leveraging machine learning and unmanned aerial vehicles (UAVs), the research explores yield prediction, early pest infestation detection, and seed-placed banding as sustainable precision farming techniques for enhancing yield and improving nutrient efficiency.

Beyond improving existing farmland, the presentation also highlights the potential of transforming underutilized savanna ecosystems into productive farmland. As global arable land becomes increasingly scarce, the African savannas have emerged as a new frontier for sustainable agricultural development. The initiative aims to transform these regions using innovative precision planters and roller/crimper equipment that enable herbicide-free soil management and regenerative crop systems.

Results from pilot operations covering 10,000–100,000 hectares near Kinshasa, Democratic Republic of the Congo (DRC) will be discussed, demonstrating how technological innovation and sustainable practices can work together to secure the world's future food supply.

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https://www.jelsciences.com/articles/jbres1922.pdf.

Biography

Tet Yeap is a professor at the School of Electrical Engineering and Computer Science at the University of Ottawa and the School of Automation at the Beijing University of Posts and Telecommunications. He received a B.A.Sc in electrical engineering from Queen's University in 1982, followed by a master's and a doctorate in the same field from the University of Toronto in 1984 and 1991, respectively. He is also the inaugural director of the Bell Advanced Research Laboratory in Ottawa (BARLO). He directed the BARLO Laboratory from 1996 to 2010, focusing on telecommunications research and development. He has published three book chapters, 35 journal and transaction papers, and 71 conference papers. He is also the holder of 75 patents. He was also the holder of the Bell Canada IP award in 2004 and the Joseph Whitward Award, Institute of Mechanical Engineers in 2005.

Starting the Cultivation of Outdoor Plants in Indoor Environments

Filip van Noort

WUR Greenhouse Horticulture, Netherlands

Abstract

More and more plants having problems growing outside. These problems have to do with changing in growing due to temperature, water, diseases etc. In my presentation I will touch on topics that maybe could help in thinking about transferring plants from unprotected to protected cultivation and which things should be answered and in what way you could collect that data.

Biography

Filip van Noort is a Dutch applied research specialist with over 30 years of experience in horticultural science and crop development. His work spans flowering and green pot plants, ornamentals, vegetables, and high-value ingredient crops including vanilla, black pepper, papaya, passionfruit, herbs, medicinal, and perfume plants. He has extensive expertise in plant growth and developmental physiology, particularly in flowering regulation of crops such as Begonia, Hydrangea, and Kalanchoë. Throughout his career, he has also conducted applied research on crop health management (including botrytis control), substrates, fertilization strategies such as low-phosphate systems, and the role of diffuse light in optimizing plant performance.

A Call to Action: Embracing Bioproducts for a Resilient Agricultural Future

Sanem Argınis

Co-founder and CEO of Kiana Agriculture, Netherlands

Abstract

As the agricultural sector faces increasing pressures from climate change, soil degradation, and growing food insecurity, the need for resilient farming systems has never been more urgent. "A Call to Action: Embracing Bioproducts for a Resilient Agricultural Future" aims to highlight the transformative potential of bioproducts in addressing these global challenges. Bioproducts, ranging from microbial inoculants to biocontrol agents and bio-based fertilizers, offer a science-driven solution to rebuild soil health, enhance crop resilience, and promote sustainable farming practices. This speech will outline the crucial role of bioproducts in regenerating agricultural ecosystems, improving soil fertility, and increasing the efficiency of farming systems, all while reducing dependence on chemical inputs. It will explore cutting-edge innovations and real-world examples of how bioproducts are already driving positive change in agricultural practices worldwide. However, the adoption of bioproducts cannot happen in isolation. It requires collaboration among scientists, farmers, industry leaders, and policymakers to create the right environment for scaling their use. This session will emphasize the need for a unified approach, with clear policy frameworks and industry incentives, to accelerate the transition to more resilient and sustainable agricultural systems. With a powerful call to action, the speech will inspire stakeholders to embrace bioproducts as essential tools for shaping the future of agriculture. By adopting these innovative solutions, we can build a food system that is not only more resilient to climate variability but also more capable of feeding a growing global population sustainably.

Biography

Prof. Sanem Argınis the co-founder and CEO of Kiana Agriculture, a science-driven company focused on advancing regenerative and climate-resilient agricultural technologies. Her interdisciplinary background has shaped her work in developing innovative solutions to address global agricultural challenges, including soil degradation, climate change, and pollution. Before founding Kiana, she held academic and industrial positions across Europe, North America, and Asia, where she contributed to peer-reviewed articles, a patented antimicrobial formulation, and a commercial encapsulated product. She currently collaborates closely with stakeholders across the agricultural sector, fostering science-society partnerships to build resilient food systems and ecological balance through evidence-based innovation.

Animal Welfare as the Basis of One Health: A UN Convention on Animal Welfare, Health, and Protection Poses a Realistic Solution to Improved Animal Welfare and Human Health

Antoine F. Goetschel
Founder of the Global Animal Law GAL Association (GAL) and UNCAHP Director, Switzerland

Abstract

As the agricultural sector faces increasing pressures from climate change, soil degradation, aI there would describe Animal welfare as the basis of One Health: A UN convention on animal welfare, health, and protection poses a realistic solution to improved animal welfare and human health. Through a legally binding UN Convention on Animal Health and Protection, the One Health approach will benefit all of society by strengthening animal welfare nationwide and globally, taking also the AMR and pandemic prevention aspects into account.

In the plenary session I would present the (to be expected) doubts worked out in the special session and address the proposal also to be in the best interest of the agri and food saftey sector. Since your scientific events help in bringing a massive change in this field, a further step in a well-orchestrated global level with legally binding impact might fit perfectly.

Biography

J.D., Dr. h.c. Antoine F. Goetschel has devoted himself to animals in law since 1985, in addition to his law firm in Zurich. As the author of the legal commentary on the Swiss Animal Protection Act (1986) and the comprehensive collection of decrees on animals in Swiss law (1987), he wrote his dissertation on animal protection and fundamental rights, headed the preliminary organization of the Foundation for Animals in Law (1995), which he established and which today has the most comprehensive collection of around 30,000 books and articles on animals in law and ethics and the collection of all of Switzerland's approximately 28,000 criminal decisions on animal protection.

Antoine contributed significantly to the introduction of the concept of the “dignity of the creature” into the Swiss Federal Constitution and the Swiss Animal Protection Act and to the establishment of the worldwide unique Office of the Attorney for Animal Protection in Criminal Matters of the Canton of Zurich, of which he was also an officer from 2007 - 2010.

Ten years ago, he established the Global Animal Law GAL Association with currently around 130 lawyers and law professors specializing in animal (protection) law and, together with some of them, drafted the “UN Convention on Animal Health and Protection” (www.uncahp.org). All animal protection laws in the world are also compiled on www.globalanimallaw.org and a matrix is available for legal policy postulates from local to global, from short-term to visionary, in the areas of legislation, application and education.

He has written a total of 13 books (some alone, some as part of a team) on Swiss animal protection law and over fifty articles on UNCAHP, animal-friendly financial investments and animals in global law. He received an honorary doctorate from the Swiss University of Berne for his services.

Micro plastics in the Field: Hidden Drivers of Soil and Plant Change

Skaistė Dreskinienė1

Monika Vilkienė2, Karolina Barčauskaitė3

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Keywords

As the agricultural sector faces increasing pressures from climate change, soil degradation, buckwheat, Endocalcari—Epihypogleyic Cambisol, microplastics, plastic mulch films, polyethylene, polypropylene, soil.

Abstract

Micro plastics (MPs, <5 mm) are increasingly accumulating in agricultural soils, potentially affecting soil health and crop performance. This study assessed short-term impacts of polypropylene (PP) and polyethylene (PE) fragments, introduced via mulch films at 0.05–0.5%, on soil properties and the growth of Fagopyrum esculentum (buckwheat) in carbonate-rich Cambisol. Low PP levels (notably 0.1%) promoted shoot and root elongation, while higher doses reduced biomass and leaf number. PE showed predominantly negative effects, significantly suppressing root growth and leaf development from 0.3%.

Both plastics increased soil pH (up to +0.67), without major effects on soil macro elements or nutrient uptake, except for nitrogen trends under PE. Microbial biomass declined at early stages, though PP stimulated microbial activity at flowering. These results demonstrate that MPs rapidly alter soil–plant interactions, with effects varying by polymer type and concentration, highlighting the need to evaluate plastic use under real agricultural conditions.

Biography

Skaistė Dreskinienė, a PhD student at the Institute of Agriculture, LAMMC received funding from the European Inventor Network.

The grant will be used for the **educational initiative "Workshops on Microplastics and Sustainability in Agriculture"**, aimed for raising students' awareness of environmental pollution, the impact of microplastics on agriculture and human health, and promoting responsible consumption, creativity, and sustainable lifestyle ideas.

The activity will take place at St. Benedict's Gymnasium in Alytus and will be intended for students in grades 7–12 (12–18 years old). Five academic-hour-long workshops are planned, involving approximately 150 students and their teachers. During the sessions, students will learn about the work of scientists, research the impact of microplastics on the environment and climate change and create educational posters that will be displayed at school as part of the awareness campaign.

Revealing Spatiotemporal Transmission of Aflatoxin-Related Health Burdens: A Deep Reinforcement Learning Framework for Optimizing Food Safety Monitoring

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5) Tongji Hospital, Tongji Medical College, Huazhong University of Science and Technology, Jiefang Avenue, 1095, Wuhan, 430030, Hubei, China.

Abstract

Aflatoxin B1 (AFB1), a Group 1 carcinogen, is among the most hazardous naturally occurring chemicals, yet its effective management remains challenging due to the dynamic and spatial complexity of modern food supply chains. Conventional monitoring frameworks focus mainly on legal-threshold compliance, but they fail to capture mycotoxin transmission across regions and seasons, limiting their effectiveness under resource constraints.We propose FRAME (Foodborne hazard Risk Assessment and Monitoring Enhancement), a mycotoxin monitoring optimization framework that integrates source-attributed disease burden estimation with reinforcement learning–based (Deep Q-Network, DQN) allocation of monitoring resources for AFB1.

Based on more than 110,000 monitoring records from China's peanut and peanut oil supply chains (2015–2022) with other multi-source datasets, our analysis shows that interprovincial production sources contribute 52% more to local disease burdens than local production, and spring/autumn contamination increases risks by 24%. Optimizing monitoring through FRAME achieves a 25–percentage point improvement in burden reduction compared with conventional programs, using fewer resources. Beyond AFB1, FRAME is transferable to other mycotoxin hazards such as ochratoxin A in cereals, fumonisins in maize, and zearalenone in edible oils, offering policymakers an outcome-oriented and resource-efficient framework for hazard governance.

Biography

Dr. Zhengcong Wang is an Associate Professor at the College of Economics and Management, Huazhong Agricultural University, China, and Deputy Director of the Food Economy and Nutrition Health Research Center at the Institute of Modern Agricultural Industrial Economy. He holds a Master's degree in Food Supply Chain Safety Management and a PhD in Food Safety Risk Management and Health Economics from Wageningen University and Research (WUR), Netherlands, where he also served as an external researcher at Wageningen Food Safety Research.

Dr. Wang's research centers on leveraging artificial intelligence and big data to manage risks at the nexus of food systems, public health, and environmental sustainability. His work includes foodborne contaminant risk assessment, forecasting foodborne disease outbreaks, optimizing agricultural practices and regulatory resources. His work has been published in journals such as Risk Analysis, Food Chemistry, and Food Research International, and he developed a national big data platform for global food safety sampling and testing. Dr. Wang has served as a consultant to the food safety program led by the World Health Organization and collaborated with Mars China on mycotoxin contamination forecasting. He has led or participated in multiple research projects funded by the National Natural Science Foundation of China, the National Social Science Fund of China, and the European Union's Horizon Programme. His interdisciplinary contributions advance sustainable, data-driven food safety governance both in China and globally.

Impact of US Tariffs and the Make America Healthy Again Agenda on Agriculture, Food Safety, and Food and Beverage Companies

Mara M. Burr

President and CEO, Nordic Global Strategies

Abstract

The imposition of US tariffs and the implementation of the Make America Healthy Again agenda have significant implications for the agricultural sector, food safety standards, and food companies operating within and outside the United States.

Tariffs will affect the cost and availability of imported agricultural inputs, disrupt supply chains, and influence export opportunities for American farmers. These economic pressures may lead to shifts in production practices, pricing strategies, and international competitiveness.

Meanwhile, the Make America Healthy Again (MAHA) agenda, focused on improving public health through nutrition and regulatory reforms, introduces new expectations for food safety and quality. This initiative encourages food companies to innovate, reformulate products, and enhance transparency in sourcing and labeling to meet evolving consumer demands and regulatory requirements.

Collectively, these policies shape the landscape of American agriculture by driving changes in market dynamics, fostering improvements in food safety, and challenging companies to adapt to a more health-conscious and regulated environment. The interplay between tariffs and health-focused policy underscores the complexity of balancing economic interests with public health objectives in the food industry.

What will the effect of these competing priorities be on the U.S. economy and how can agriculture companies and farmers, as well as food and beverage manufacturers compete effectively in the global market under these conditions.

Biography

Mara M. Burr, JD, LL.M is a distinguished leader in international law, trade policy, and global public health with over two decades of experience in government, academia, and industry. She currently serves as President and CEO of Nordic Global Strategies and Adjunct Professor at Georgetown University Law Center. Throughout her career, she has held senior roles including Vice President of Regulatory & Technical Affairs at Consumer Brands, Director at the U.S. Department of Health and Human Services, and Deputy Assistant U.S. Trade Representative in the Executive Office of the President. A skilled negotiator and policy strategist, Burr has led complex multilateral and bilateral negotiations, authored publications on international trade and regulatory affairs, and championed initiatives in food safety, nutrition, and global competitiveness. She holds an LL.M. from Georgetown University Law Center, a JD from Mitchell-Hamline School of Law, and a BA from the University of St. Thomas.

Crop Harvest Bottle Technology

Shuisen Chen*1, Weiping Zhu2

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Abstract

A kind of medicine is invented by Dr. Zhu Weiping in Conghua District, Guangzhou in 2018 and has been continuously developed and improved for all kinds of crops. This medicine uses gas phase information transmission technology to significantly increase flowering and fruiting rate of crops, promote crop growth, reduce pests and diseases, enhance plant vitality, and achieve increased crop yield and harvest through the scent emitted by Chinese herbal medicine liquid. This medicine is made from pure Chinese herbal liquid, which is safe and environmentally friendly. It is an environmentally friendly postmodern agricultural new technology.

Biography

Dr. Shuisen Chen is a Professor of Remote Sensing in environment & precision agriculture and the Director of Center for Engineering Technology Application Research of Remote Sensing Big Data, Guangdong Province of China at Guangzhou Institute of Geography, Guangdong Academy of Sciences. He specializes in remote sensing-based spatiotemporal analysis and modeling for coastal and water environment, precision agriculture, dual carbon big data, and is the doctoral supervisors at University of Chinese Academy of Sciences. He is the Associate Editors Frontiers in Environmental Science. Dr. Chen gained the doctor degree in Institute of Remote Sensing Application of Chinese Academy of Sciences (CAS). He is the Nanling Team Leader of Shaoguan Talent Project "Double Carbon Space Big Data" of Guangdong, China.

Weiping Zhu, Senior Agronomist
Born in 1966, Dr. Zhu is an expert in traditional Chinese medicine agriculture technology and holds a PhD in agriculture. He had taught at a university and has been researching and developing traditional Chinese medicine agriculture technology for a long time. Since 2015, he has achieved significant results in using traditional Chinese medicine and microbial agriculture technology to prevent and control citrus Huanglongbing, banana Panama disease (with invention patents), wasp, tomato bacterial wilt, and root rot, and has continuously promoted and applied them. In 2018, he invented the Harvest Bottle technology, which became the biggest highlight is constantly in crop application.

Hydrophilic Microporous Matrix Hosting a Symbiotic Microbial Consortium for Crop Resilience Enhancement

Dr. Teresa Matoso Manguangua Victor

Instituto Superior Politécnico de Tecnologias e Ciências (ISPTEC), Luanda, Angola

Abstract

A kind of medicine is invented by Dr. Zhu Weiping in Conghua District, Guangzhou in 2018 This work introduces a novel hydrophilic microporous matrix, synthesized via High Internal Phase Emulsion (HIPE) polymerization, uniquely engineered to host a living symbiotic microbial consortium of endophytes and PGPR. Unlike conventional polymeric HIPE materials, which are typically inert, this matrix is specifically designed to preserve microbial viability, enable colonization, and support direct plant–microbe interactions in soil environments.

The process integrates chemical reaction engineering principles kinetic modelling, emulsion thermodynamics, and semi continuous reactor operation with microbial compatibility constraints, representing an uncommon and innovative convergence between polymer engineering and agricultural biotechnology. Controlled shear emulsification and residence time optimization were critical to maintaining matrix porosity while protecting embedded microorganisms.

SEM imaging provides direct evidence of novelty, revealing microbial colonization within the matrix, root hair penetration into the porous structure, and migration of endophytes from the matrix into plant tissues. Field trials across five crops (coffee, banana, Miscanthus, palm oil, maize) demonstrated consistent improvements in growth, biomass, chlorophyll retention, and reduced symptoms associated with Fusarium oxysporum.

By coupling the matrix with the Symbiotic Rhizosphere Simulated (SRS) system, this work establishes a new integrated platform for agro process intensification, offering a scalable, biologically active material for next generation sustainable agriculture.

Keywords

A kind of medicine is invented by Dr. Zhu Weiping in Conghua District, Guangzhou in Hydrophilic microporous matrix; HIPE polymerization; PGPR; endophytes; rhizosphere engineering; process intensification; sustainable agriculture; SRS system; crop resilience; Fusarium suppression.

Biography

Dr. Teresa Matoso Manguangua Victor is an Associate Professor and senior researcher at the Instituto Superior Politécnico de Tecnologias e Ciências (ISPTEC), Angola. She holds a BSc (Honours) in Chemistry with Chemical Engineering from Northumbria University (UK), a Master's degree in Sustainable Chemical Engineering, and a PhD in Chemical Engineering from Newcastle University (UK). Her research focuses on hydrophilic microporous polymeric materials, reaction engineering, and biotechnology for crop resilience. She develops innovative HIPE derived matrices and symbiotic microbial systems that integrate process intensification with plant–microbe engineering.

Dr. Victor is the author of international patents and peer reviewed publications spanning chemical engineering, bioprocessing, and microbial symbiosis. A lifetime member of the World Research Council, she leads scientific collaborations across Angola, the United Kingdom, and India. Recognized among the 100 Most Influential Women in Angola (2024, 2025), she is committed to advancing sustainable agricultural technologies with global impact.

Interdepartmental Coordination: A Mechanism for Governing Cross-Cutting Issues toward Sustainable Dairy Development in Kenya

Annita Kirwa,

International Livestock Research Institute, Kenya

Abstract

A kind of medicine is invented by Dr. Zhu Weiping in Conghua District, Guangzhou in Navigating the interactions among Sustainable Development Goals (SDGs), manifesting as both synergies and trade-offs, requires mechanisms that facilitate coordinated responses among the multiple actors involved in governing Kenya's dairy sector. This study investigates existing mechanisms that facilitate coordination between Ministries, Departments, and Agencies (MDAs), and how they contribute to governing the SDG interactions. The analysis draws on insights from 31 semi-structured interviews with selected officers situated in different MDAs, complemented by a review of relevant policy documents. The findings reveal that several institutional arrangements function as mechanisms of coordination to govern the interactions that characterize Kenya's dairy sector. These mechanisms include the centre of government efforts, interdepartmental coordination, policy integration, and regulatory impact assessment—each operating through a set of sub-mechanisms including inter-ministerial committees, sector working groups, thematic task forces and joint planning platforms. Collectively, these mechanisms ensure cross-cutting gender (SDG 5) and climate (SDG 13) issues are mainstreamed into dairy-related policies and programmes. Through these same mechanisms, issues of productive employment and fair wages (SDG 8), as well as equitable access to resources and recognition of inequalities faced by smallholder dairy farmers (SDG 10), are increasingly prioritized by actors across the MDAs as key considerations that could guarantee the sector's long-term sustainability. While the identified mechanisms have limitations in ensuring effective governance of SDG interactions, this study provides supporting evidence of their contribution towards governing the dairy sector across its social, economic, and environmental dimensions. Nonetheless, there remains a window of opportunity to further strengthen the identified coordination mechanisms.

Keywords

Governance, Sustainable Development Goals, Sustainable Dairy Development, coordination mechanisms, and the Kenyan dairy sector.

Biography

Kirwa Annita is a PhD researcher registered at the Public Administration and Policy group (Wageningen University & Research) and hosted at the International Livestock Research Institute in Kenya. She holds a bachelors' degree in geography from Egerton University and a masters' degree in environmental risks and human security from United Nations University and University of Bonn, Germany. Her research is focused on the role of governance mechanisms for cross-level and cross-sector alignment in addressing trade-offs and creating synergies between the Sustainable development Goals (SDGs) in Climate Smart Livestock (CSL) policies and projects in Kenya. She takes a global to local approach, taking efforts of development actors at the global and international level as a starting point and traces how their actions affect SDG interactions at the local level (paying close attention to policy coherence for development through mechanisms for inter-donor and inter-departmental coordination).

Effect of Management System on the Physico-Chemical Properties of Soil in an Organic Pedro Ximenez Vineyard

M. Angeles Varo1*, Veronica Muñoz-Romero 2, Lourdes Moyano 1, Azahara Lopez-Toledano 1, Pilar Ramirez 3

*1 Fruit Processing Research Group. Department of Agricultural Chemistry, Soil Science and Microbiology, Faculty of Sciences, University of Cordoba, Campus of Rabanales, 14014 Cordoba, Spain

2 SUMAS Research Group. Department of Agricultural Chemistry, Soil Science and Microbiology, Faculty of Sciences, University of Cordoba, Campus of Rabanales, 14014 Cordoba, Spain

3 Centro IFAPA "Cabra", Antigua Ctra. Cabra-Doña Mencía, km 2,5, 14940, Cordoba, Spain

Abstract

Soil management by traditional tillage has been commonly used over the years as a cultivation practice, combined with herbicides. This is the case of the Montilla-Moriles wine protected designation of origin (PDO) in southern Spain. Since the use of this practice can lead to decreases in the physical and chemical stability of the soil, more sustainable management is being considered, to minimise these problems. One of these practices is no-tillage with vegetation cover which could improve the physical structure of the soil by decreasing the mineralisation of organic matter and erosion, among other advantages. This is why this strategy is gaining more and more popularity in Spanish and world viticulture, as it is also perfectly adapted to the measures taken by European governments to improve environmental quality. The aim of this work was to evaluate the effect of management system on grapes yield and physical and chemical properties of the soil in a white grape vineyard (var. Pedro Ximenez). The treatments studied were traditional tillage and no-tillage with vegetation cover at different soil depths.

The experiment was carried out in an experimental vineyard of the Andalusian Institute for Research and Training in Agriculture, Fisheries, Food and Organic Production located at Cabra (IFAPA, Cordoba, Spain). It was found that some physical properties were not affected, such as texture and humidity. However, improvements were observed in the concentration of organic carbon, nitrogen and phosphorus in the soil with a no-tillage management system with cover crop. In addition, significant differences were found in the content of some macronutrients with the depth of the soil profile studied. Finally, regarding vineyard yield, grape production was higher in the traditional tillage system, which could lead to a future study on improving production in vineyards that use cover crops.

Keywords
tillage; cover crop; soil; vineyard

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Biography
M. Angeles Varo is assistant Professor at the University of Cordoba. Her research focuses on Agrifood Chemistry, covering a wide spectrum of products, including wine, spirits, probiotic- enriched juices, bee pollen, etc. Furthermore, she investigates the impact of soil composition on food production, with a particular emphasis on sustainable agriculture. She has published numerous scientific articles and she has participated in several national and international conferences.

Veronica Muñoz is full Professor at the University of Cordoba at the University of Cordoba. She has been a visiting worker in the Soil Science Departament at Rothamsted Research. She has been a researcher on several national projects and contracts with the University. She has published more than 20 indexed scientific articles and many scientific articles in national journals and reports. She has belonged to two national research networks on the efficiency of the use of fertilizer nitrogen

Lourdes Moyano Cañete is a full Professor at the University of Cordoba, (Spain). Her research focuses on the agro-food chemistry of a wide range of foods, mainly wines, distilled beverages, probiotic-enriched fruit juices, bee pollen, etc. She has co-supervised several national and international doctoral theses, published several scientific articles scientific articles and held several patents.

Azahara Lopez-Toledano is a full Professor at the University of Cordoba. Her work centers on Agrifood Chemistry, with a focus on a wide range of products including wine, spirits, probiotic- enriched juices, and bee pollen. She also investigates the impact of soil composition on food production, particularly in the context of sustainable agriculture. She has published numerous scientific articles, participated in both national and international conferences, and holds several patents.

Pilar Ramirez Perez holds a PhD in Agricultural Engineering from the University of Cordoba. She is Technical Coordinator at IFAPA Cabra, specializing in Viticulture and Enology. Pilar has contributed to over 150 scientific publications and participated in national and international R&D projects. She serves on various expert juries and editorial boards, and has received multiple awards, including the "Prensa Agraria 2022" and recognition for sustainable development and research in viticulture and enology.

Plant-based probiotic beverages with Lactiplantibacillus Pentosus LPG1 From Table Olives

M. Angeles Varo*1,
Diego Bohoyo-Gil1 , Francisco Noé Arroyo-López2 , Veronica Romero-Gil2 , Virginia Martin-Arranz2 Azahara Lopez-Toledano1 and Lourdes Moyano1

1 Fruit Processing Research Group. Department of Agricultural Chemistry, Soil Science and Microbiology, Faculty of Sciences, University of Cordoba, Campus of Rabanales, 14014 Cordoba, Spain
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Abstract

Probiotics are beneficial live microorganisms that promote health when the host consumes them in adequate amounts. Nowadays, the development of plant-based foods with this type of microorganism is increasing because they can be an alternative to dairy products, offering a significant advantage for lactose-intolerant people. However, the physical, chemical, and organoleptic characteristics of these beverages, and therefore consumer acceptance of these products, are influenced by the adaptation of the probiotic strain and the selection of the substrate. In this study, four innovative formulations were developed by blending fruits and vegetables with the incorporation of a unique probiotic strain, Lactiplantibacillus pentosus LPG1, isolated from the olive processing industry.The results demonstrated that it is possible to reach an average probiotic count of 6.45 log10 CFU/mL at 52 days of storage at 4 ◦C without detection of Enterobacteriaceae, fungi/molds, or pathogenic bacteria such as Staphylococcus, Listeria, or Salmonella spp. Moreover, to comprehensively determine the potential healthpromoting properties of the formulated products, the research

the research encompassed an analysis of their nutritional composition, antioxidant capacity, and organoleptic characteristics. In this sense, the beverages obtained can be considered high-value functional products due to their notable antioxidant activity—reaching up to 33% DPPH inhibition—and significant total polyphenol content exceeding 0.5 g gallic acid/L, along with a balanced nutritional profile. Sensory evaluation, including flash profiling, acceptance, and affective testing, indicated positive consumer responses regarding aroma, flavor, and appearance, supporting their potential for commercialization as ready-to-drink probiotic beverages.

A Time-dependent Compartmental Model for PFAS Uptake and Tissue Distribution in Tomato Plants Across PFBA–PFUnA

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Abstract
(Background & Objective)

Understanding how per- and polyfluoroalkyl substances (PFAS) accumulate in different tissues of food crops is essential for evaluating food safety risks in the circular food system. However, quantitative models that capture time-dependent PFAS uptake remain limited. In addition, most studies often focus on the influence of compound properties, while the influence of the plant-related factors were underexplored. To address this, this study developed and evaluated a time-dependent, mass-balance-based compartmental model predicting uptake and distribution of PFCAs (PFBA–PFUnA) in tomato plants, with differentiation of root, stem, twig, leaf, and fruit concentrations.

(Methods): The model incorporates compound hydrophobicity, transpiration-driven transport, carrier-based active transport, and tissue-specific accumulation behaviors. Model predictions were evaluated against data from an experiment measuring the uptake of multiple PFAS in a hydroponic system.

(Results & Conclusion)

Predicted PFAS concentrations across plant tissues ranged within one order of magnitude from the experimental data. The model successfully reproduced characteristic chain-length patterns, including higher mobility of short-chain PFAS and increased retention of long-chain PFAS in roots. However, concentrations in roots were underpredicted for long-chain PFAS (C9–C11). This study provides a mechanism-based yet tractable model, contributing to improved comprehensive exposure assessment and supports future risk evaluation for PFAS uptake in crops in circular food system.

Sustainable Global Phosphorous Inputs in View of Crop Yields and Water Quality

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Abstract
Sustainable management of phosphorus (P) requires inputs at such a level that the (soil) P supply does not limit the required food production for the growing global population (just boundaries) while keeping P losses by erosion and runoff within limits to avoid adverse impacts on water quality (safe boundaries). We developed and applied a method to assess the medium-term (period 2015-2050) and long-term (period after 2050) required amount of P fertilizer in view of a target crop P uptake for food production, in combination with acceptable P losses. The ‘medium-term required’ amount is defined as the amount that brings all cropland soils to a target soil Pstatus that does not limit crop growth(build-up or mine)

in addition to the target crop P uptake in view of global food P demand and acceptable P losses in view of water quality. The 'long-term required' amount is set equal to the target crop P uptake and acceptable P loss only, thereby maintaining the adequate soil P level that has been built-up or mined during the medium term period. The target crop P uptake was calculated as the P uptake at a target crop yield, defined as 80% of the crop yield potential, corrected for the global food P consumption demand. This demand was derived by multiplying the global population with an advised annual P intake, and dividing it by the share of crop uptake that is consumed by humans.

The current (year 2015) global P budget includes a P input of 39.4 Tg P yr-1 of which 27.2 Tg P yr-1 is taken up, while the P surplus of 12.2 Tg P yr-1 is divided over a soil P accumulation rate of 10.9 Tg P yr-1and a runoff rate of 1.3 Tg P yr-1. Sustainable global P inputs imply that the world population can be fed while P losses to surface water stay below a critical limit. The required P uptake to feed a global population of 10 billon people is 32.5 Tg P yr-1. In a situation in which the soil has attained a target P status, which does not limit the P uptake, the required P surplus to maintain that P status is equal to an estimated runoff of 1.1 Tg P yr-1, thus implying a sustainable P input of 33.6 Tg P yr-1. To avoid P losses that exceed water quality criteria, the current P erosion rate, however, needs to be reduced from a current 4.0 Tg P yr-1 to 1.6 Tg P yr-1 by erosion control. In addition, the gap between the current soil P status (base year 2015) and the target soil P status at global scale can be filled to ensure a crop yield increase while accounting for the P sorption capacity. The total global gap is estimated at 797 Tg P, implying a global annual P requirement of 22.7 Tg P yr-1 between 2015 and 2050 reach the target soil P status for all soils. However, the increase in soil P fertility can best be attained in soils with limited P sorption capacity to limit the soil P investment.

Biography

Wim de Vries is professor in the discipline of environmental systems analysis. His chair focuses on "Integrated nitrogen impact analysis" but his research domain is broader than nitrogen alone. His research is organized around impacts of the input of nutrients (especially nitrogen,phosphorus, calcium, magnesium and potssium) and metals in agriculture and forests on air, soil and water quality, productivity and plant species diversity and related input boundaries/critical loads. He has a long lasting scientific experience in the domain of (i) soil chemistry in relation to air pollution, forest ecology and management (over 35 years), and (ii) sustainability of agricultural management in the Netherlands (over 20 years), Europe (over 10 years), China and at global scale (over 5 -10 years).

His specific expertise is related to the development and application of soil models at various regional scales including landscapes, countries and continents (especially Europe) in combination with field and laboratory research. This refers to the use and fate of carbon and nutrients (especially nitrogen and phosphorous) in soil, air and water. He has also gained a large experience in related topics, such as atmospheric chemistry and effects on (services of) terrestrial ecosystems, with special reference to forests in view of eutropication and acidification.

Wim de Vries published more than 600 research papers, book chapters and reports, of which over 250 papers in international peer reviewed journals on the topics above. He is on the Standford's list of World's Top 2% Scientists in terms of citations, H-index, and a wide range of bibliometric indicators.

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Experienced professional with a demonstrated history of working in the discipline of Quality Assurance, Research & Development in the food production industry. Skilled in ISO 22000,14001, GMP, & OHSAS 18001, Quality Management, Quality Assurance & Research & Development . Good practical knowledge on QA and R & D with sound academic qualifications with Degree in Biological Science from University of Colombo and Master's degree in Food Science and Technology from University of Sri Jayewardenepura along with a Masters degree in Management from Kotelawela Defense University.

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Inspiring goodness...

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Dr. Monika Vilkienė is Head of the Department of Science and Innovations at the Lithuanian Research Centre for Agriculture and Forestry (LAMMC), a leading public research institute in Lithuania focused on sustainable agronomy, forestry and environmental sciences. She holds a doctoral degree in Agricultural Sciences with a research focus on soil organic carbon dynamics. Dr. Vilkienė has extensive experience in managing national and international research projects, including Horizon 2020 initiatives, and is actively involved in scientific collaborations across Europe. Her research interests span soil microbiology, agronomy, and climate-smart sustainable land management.

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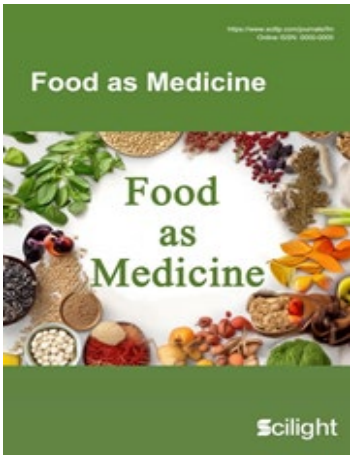

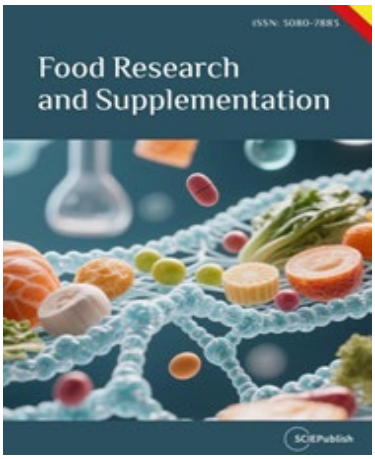

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