
University of Agronomic Sciences and Veterinary Medicine of Bucharest
Romanian Academy
University of Agriculture in Krakow
University of Forestry Sofia
UniLaSalle Institut Polytechnique
AQUA CARPATICA
One Health
Student Conference
USAMV București
Under the patronage of The Romanian Academy
3-5th December 2025 | Bucharest, Romania
onehealth.usamv.ro
Environment Health and Climate Changes
Animal Welfare
Landscape, Green Areas, and Forest for Healthy Life
Sustainable Plant Production
Human Health and Nutrition

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# Program

**Zoom link: https://zoom.us/j/91958446422?pwd=6ZC1ZjKx3cVe980wiGE4o4UKyulv7Y.1**
Meeting ID: 919 5844 6422, Passcode: 975820

## Wednesday, 3rd of December 2025

| | |
|---|---|
| 08:30-09:30 | **Welcome and Registration - Aula Magna „Petre S. Aurelian" Building A, Rectorate** |
| 09:30-10:00 | Opening ceremony – Aula Magna „Petre S. Aurelian" Building A, Rectorate<br>Florin STĂNICĂ, Vice-Rector, University of Agronomic Sciences and Veterinary Medicine of Bucharest, Convener<br>Gina FÎNTÎNERU, Vice-Rector, University of Agronomic Sciences and Veterinary Medicine of Bucharest<br>Gigel PARASCHIV, State Secretary, Ministry of Education (tbc)<br>Ioan JELEV, President of the Romanian Academy of Agricultural and Forestry Sciences<br>Ioan SÎRBU, President One Health Romanian Association<br>Vlad BUCUR, Chair of the Student Association, University of Agronomic Sciences and Veterinary Medicine of Bucharest |
| 10:00 – 10:30 | **Keynote Speaker, Ioan NEGRUȚIU** – One Health, as systemic health, is a chance for humanity. The reasons why. |

## Session - Sustainable Plant Production

**Moderators: Beatrice IACOMI, Ioana MIHĂLCIOIU**

| | |
|---|---|
| 10:30 – 10:45 | **Keynote Speaker, Ileana RÎNDAȘU** - The use of homeopathy in the agroecosystem and the one health concept |
| 10:45 – 11:00 | Raheleh NAJAFI - Exogenous Spermidine enhances growth and antioxidant defence in tomato under heat stress |
| 11:00 – 11:15 | Thobile MKHWANAZI - Exploring cancer bush-microbial interaction and its implications on sustainable commercialization |
| 11:15 – 11:30 | Dilini Tharaka HITIHAMI MUDIYANSELAGE - Leaf-derived biodegradable hydrogels for water-smart agriculture: circular valorization of autumn leaf-fall |
| 11:30 – 12:00 | Coffee break |
| 12:00 – 12:15 | Nompumelelo NOBELA - Nematode challenges affecting smallholder vegetable producers in Ehlanzeni district, Mpumalanga, South Africa |
| 12:15 – 12:30 | Jozef GAŠPAROVSKI - Potential of *Meyerozyma caribbica* and *Trichoderma virens* as a biostimulant for onion (*Allium cepa* L.) production |
| 12:30 – 12:45 | Hamilton PHARASI - Effect of *Meloidogyne incognita* and *Pseudomonas syringae pv tomato* and interventions on the growth, physiology, and gas exchange in infected tomato plants |
| 12:45 – 13:00 | Larisa Theodora ȚILINCĂ - First report of *Fusarium solani* and *F. equiseti* in an organic kiwifruit orchard from Romania |
| 13:00 – 13:15 | Cornelia FURSENCO - Chemical compounds with therapeutic potential from the species *Solidago canadensis* L., grown in the Republic of Moldova |
| 13:15 – 13:30 | Ali EL BOUKHARI - Biochemical heterogeneity in seedling-grown *Argania spinosa* orchard: Toward improved oil and by-product quality |
| 13.30 – 14.30 | Lunch break |

## Session - Sustainable Plant Production

**Moderators: Mihaela GEORGESCU, Alexandru BUCUR**

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|---|---|
| 14:30 – 15:00 | **Keynote Speaker, Andrei CONȚIU** - SPOBS (observed species): a mobile digital architecture for advanced biodiversity monitoring and non-chemical pest management |
| 15:00 – 15:15 | Siphesihle MTHOMBENI - Propagation protocol of Bushtea (*Athrixia Phylicoides*) |
| 15:15 – 15:30 | Samkelisiwe Lizzy MLIMI - Optimizing commercial nitrogen-fixing bacteria rates on nodulation and growth of Bambara groundnut (*Vigna subterranea* (L). Verdc |
| 15:30 – 15:45 | Margherita DAVIDE - Physicochemical and sensory analysis of several cultivars and new apricot hybrids |
| 15:45 – 16:00 | Oumayma RACHDI - Smart fog irrigation for fig propagation: an IOT Lorawan closed-loop microclimate system |
| 16:00 – 16:15 | Cristina-Florentina ION - Impact of biostimulants on root formation and development in *Actinidia arguta* cuttings |
| 16:15 – 16:30 | Abiola AGONKOUN - The combination of a consortium of arbuscular mycorrhizal fungi with reduced doses of fertilizers enhances the growth and yield of vegetable crops in southern Benin |
| 16:30 – 16:45 | Luminița Florica GAITANARU - Assessment of climatic effects on seed germination in diverse varieties of edible amaranth |
| 16:45 – 17:00 | Nicholus MNYAMBO - Green-synthesised nanoparticles for the management of *Meloidogyne incognita* and enhancement of plant growth under greenhouse conditions |
| 17:00 – 17:15 | Andreea POJAR - Response of *Vitis vinifera* to *in vitro* virus eradication techniques |

## Thursday, 4th of December

### Session – Environment Health and Climate Changes

**Moderators: Mirela Alina SANDU, Gina BUJOR**

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|---|---|
| 10:00 – 10:30 | **Keynote Speaker, Ionuț Sorin BANCIU** - Reziliența socio-ecologică a Munților Făgăraș |
| 10:30 – 10:45 | Anđela VASIĆ- Forest health in a changing climate: comparative assessment of defoliation trends in Romanian and Serbian forests |
| 10:45 – 11:00 | Iulia COROIAN - Spatial analysis of green infrastructure in Cluj-Napoca and its implications for urban air quality |
| 11:00 – 11:30 | Coffee break |
| 11:30 – 11:45 | Amina HAMADI - Agroforestry in crop systems and its influence on the chemical fertility of soils in semi-arid regions: Case of the Dahra foothills (North-West, Algeria) |
| 11:45 – 12:00 | Sizwe Henry NGOBENI - Phytochemical characterization of *Solanum mauritianum* and *Tagetes minuta* extracts |
| 12:00 – 12:15 | Martina VLADIMIROVA - Shared strategies for survival: a comparative analysis of leaf dry mass suggests similar drought tolerance traits within taxodiaceae species under urban conditions |
| 12:15 – 12:30 | Bianca-Denisa CHEREJI - The benefits of sheep wool waste in the absorption of indoor air pollutants |
| 12:30 – 12:45 | Carol SHABALALA - Efficacy of the native entomopathogenic nematodes (EPN) on the survival of *Ceratitis capitata* |
| 12:45 – 13:00 | Jesus Osvaldo ESTRADA MALDONADO - Economic impact of air pollution on health and productivity in Małopolskie region, Poland (2013-2018) |

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| 13:00 – 14:30 | Lunch break |

## Session – Animal Welfare

**Moderators: Nicoleta CIOCÎRLIE, Vlad Constantin PĂSAT**

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|---|---|
| 14:30 – 14:45 | Diana DIMOVA - Tiny tools, big impact: silver nanoparticles for veterinary diagnosis and therapy |
| 14:45 – 15:00 | Ibrahima Mamadou SALL - Phenolic-rich ethanolic extract of kinkeliba (*Combretum micranthum*) mitigates DSS-Induced ulcerative colitis in C57BL/6 mice |
| 15:00 – 15:15 | Eduard-Marian GLUGĂ - Environmental enrichment as a method of animal welfare in pig husbandry |
| 15:15 – 15:30 | Ramona-Florina JINGA - Zoonotic potential and model value of animal herpesviruses in human disease research |
| 15:30 – 15:45 | Elena Gabriela IVĂNUȘ - Obesity as an etiological factor in mammary cancer in humans and dogs: a one health approach – literature review |
| 15:45 – 16:15 | Coffee break |
| 16:15 – 16:30 | Liliana NACHE - Clinical evaluation of Vetrix EyeQ amniotic eye drops in the treatment of refractory cornean ulcers in dogs |
| 16:30 – 16:45 | Dan-Andrei DIACONESCU - Subpalpebral ocular lavage system |
| 16:45 – 17:00 | Laura FEODOROV - An aquatic system multi-level evaluation using species-specific sensitivity bioindicators |
| 17:00 – 17:15 | Tadiogo Naty Amine KONE BOKO - Use of an algae-based feed supplement in pig farming: Toward a « One Health » strategy for controlling pathogenic and antibiotic-resistant *Escherichia coli* strains |
| 17:15 – 17:30 | Katarina PAJIĆ - Milk safety under emerging mycotoxin threats: current knowledge and future challenges from One Health perspective |
| 18:00 | Guided Bucharest City tour. Starting point - Main Building A, Rectorate |

## Friday, 5th of December

## Session - Landscape, Green Areas, and Forest for Healthy Life

**Moderators: Claudia FABIAN, Vitălina SANDU**

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|---|---|
| 09:00 – 09:15 | Maria HRISTOVA - CSR strategies and leaf functional traits of eight ornamental perennial grasses in landscape design |
| 09:15 – 09:30 | Paul GABOR ILIESCU - Integrative healing gardens: theory, history, legends, and practice |
| 09:30 – 09:45 | Tatiana GROPA – Ecological adaptation and ornamental potential of *Euonymus* L. species in the Republic of Moldova |
| 09:45 – 10:00 | Anca-Roxana STRUGARIU - Landscape interventions enhancing urban green space development in Târgu Frumos, Iași county, Romania |
| 10:00 – 10:15 | Comfort ADEDOKUN - Assessment of the environmental impact of amaranth on urban ecology and landscape management |
| 10:15 – 10:30 | Anca-Roxana STRUGARIU - Land use and land cover changes in the Colentina sub-basin during 2000-2018 using land Copernicus data |
| 10:30 – 11:00 | Coffee break |

## Session – Human Health and Nutrition

**Moderators: Gratziela Victoria BAHACIU, Gabriela Elena STAN**

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|---|---|
| 11:00 – 11:30 | **Keynote Speaker, Marilena BUDRONI** - Sardinian Sourdough Collection: insight into microbiological and biochemical characterisation, and nutritional influence on consumer health |
| 11:30 – 12:00 | **Keynote Speaker, Lucian EVDOCHIN** - Hidden cardiac risks in everyday dietary habits – monitoring possibilities through wearable devices |

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| 12:00 – 12:15 | Elena PEȚ - Determinants of food waste among consumers: evidence from a cross-sectional study |
| 12:15 – 12:30 | Elena PEȚ - Perceptual and experiential determinants of food purchase decisions: insights into shelf selection behavior |
| 12:30 – 12:45 | Rajesh BATHIJA - Microplastic contamination in milk and dairy products - present and future |
| 12:45 – 13:00 | Roxana Elena VASILIU - BioTa EcoToken: Sustainable Dairy 4.0 through integrated blockchain and artificial intelligence |
| 13:00 – 14:15 | Lunch break |
| 14:15 – 14:30 | Ayéwomu Cyrille DJOWAMON - Characterization of beekeeping value chains in Africa: a systematic review with insights from the Republic of Benin |
| 14:30 – 14:45 | Ancuta STĂVAR - Parenting and anti-vaccinism on social media |
| 14:45 – 15:00 | Yang HUA - Research on marketing strategy innovation of Chinese enterprises in the context of digital and green transformation |
| 15:00 – 15:15 | Saisatya Keerthi REDDI and Robert G. BRANNAN - Upcycling overripe *Asimina triloba* (pawpaw) pulp in plant-based meat alternatives |
| 15:15 – 15:30 | Muhammad JAWAD, Angela R. HILLMAN, and Robert G. BRANNAN - The challenge of comparing tart cherry polyphenols from the USA and Europe |
| 15:30 – 15:45 | Coffee break |
| 15:45 – 16:00 | Registration for the multicultural event |
| 16:00 – 18:00 | Christmas carols, customs and traditions, Aula Magna „Petre S. Aurelian” Building A, Rectorate |
| 18:00 | Romanian Traditional Dinner in the Rectorate building |

# Keynote Speakers

## ION NEGRUȚIU

**Presentation title:**
One Health, as systemic health, is a chance for humanity. The reasons why

Ioan NEGRUȚIU graduated in agricultural engineering and biology. He is presently professor emeritus at the ENS de Lyon, France and Honorary Member of the Institut universitaire de France and of the Romanian Academy. In his research, after completing a doctoral thesis at the Vrije Universiteit Brussel, and post-doctoral positions and sabbaticals at the University of Paris-Orsay, INRA de Versailles, Friedrich Mischer Institute, and Caltech, he became interested in the reproduction and evolution of plants and the molecular mechanisms of floral diversity. These questions address issues related to the origins of agriculture and the stewardship of primary resources: biomass, soil, water. His teaching experience has covered molecular genetics, epigenetics and genomics, plant development and evolution, biodiversity and biological resources, as well as the history of science and contemporary problems of science and society.

## ILEANA RÎNDAȘU

**Presentation title:**
The Use of Homeopathy in Agriculture and One Health Concepts

Dr. Ileana Rîndașu is a medical rehabilitation specialist, with additional qualification in homeopathy. Lecturer at the postgraduate courses of homeopathy (since 1995), organised beginning with this year by the University of Medicine and Pharmacy Carol Davila from Bucharest, for doctors who are trained for the additional qualification in homeopathy. President of the Romanian Homeopathy Society since November 2018, after serving as General Secretary at the same association since 2009.

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# ANDREI CONȚIU

**Presentation title:**
SPOBS (observed species): a mobile digital architecture for advanced biodiversity monitoring and non-chemical pest management

Andrei Conțiu, MSc, is a horticultural engineer and IT project manager. He graduated from the Faculty of Horticulture at the University of Agronomic Sciences and Veterinary Medicine of Bucharest (USAMV), where he also completed a master's degree in Biodiversity Conservation Management.

Since 2001, he has been involved in the design and development of ERP systems. Starting in 2017, he has combined life sciences with information technology in an interdisciplinary manner, focusing particularly on biodiversity, environmental sustainability, and ecological horticulture practices. He is currently a PhD candidate at the Faculty of Horticulture, USAMV Bucharest, conducting research in integrated pest management with an emphasis on conservative biological control.

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# IONUȚ-SORIN BANCIU

Vice-president of the National Regulatory Authority for Mining,
Petroleum and Geological Storage of Carbon Dioxide (ANRMPSG/NRAMPGS)

**Presentation title:**
Reziliența socio-ecologică a Munților Făgăraș

Ionuț-Sorin Banciu holds a bachelor's degree in Forestry (2003) and a master's in Forest Ecosystems Management (2011) from Transylvania University of Brașov, along with postgraduate studies in Applied Informatics and Programming from the Technical University of Cluj-Napoca. He began his career in forest management, advancing to leadership roles such as Chief and Technical Manager within forest administrations in Brașov County until 2017.
From 2017 to 2020, he served as Regional Lead for Forest Programs at WWF Central and Eastern Europe, coordinating cross-border projects on sustainable forestry and conservation in Slovakia, Ukraine, Hungary, Romania, and Bulgaria.
In public service, he has been Advisor to the Secretary of State for Forests, Member of the Romanian Parliament, and Secretary of State for European Affairs at the Ministry of Environment. Since October 2024, he has been Vice-president of the Romanian National Regulatory Authority for Mining, Petroleum, and Geological Storage of Carbon Dioxide.

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# MARILENA BUDRONI

**Presentation title:**
Sardinian Sourdough Collection: insight into microbiological and biochemical characterisation, and nutritional influence on consumer health

Degree in Agricultural Sciences, PhD in Microbial Biotechnologies at the University of Sassari; Postgraduate in Viticulture and Oenology. Full Professor in Applied Microbiology at the University of Sassari. Research work at INRA-ENSAM, IPV of Montpellier (France); Department of Plant Biology at the Biological Centre in Haren, Groningen (Netherlands). Bachelor's, PhD and master's thesis supervisor. Previous coordinator of Microbiological agri-food Biotechnologies curriculum at the Doctoral School of the University of Sassari.

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# LUCIAN EVDOCHIM

**Presentation title:**
Hidden Cardiac Risks in Everyday Dietary Habits – monitoring possibilities through wearable devices

Lucian Evdochim, PhD, is a researcher in wellness technologies. His background spans engineering, biomedical science, and wellness. He graduated from the Faculty of Electronics, Telecommunications and Information Technology, where he also completed a Master's degree in Micro and Nano Technologies. He later earned a PhD in biomedical area, focusing on cardiac signal analysis and emerging technologies for cardiovascular health.
He collaborated with IMT Bucharest and the Bucharest Military Hospital on multidisciplinary projects involving wellness data interpretation. He has authored more than 20 scientific papers published in national and international journals and conferences.

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WORKING SESSION

# SUSTAINABLE PLANT PRODUCTION

# One Health, as systemic health, is a chance for humanity. The reasons why.

**Ioan NEGRUȚIU**

*ENS de Lyon, RDP laboratory, Institut Michel Serres, France*

*Corresponding author email: ioan.negrutiu@ens-lyon.fr*

## Abstract

One Health agendas hide an unconvenient, unconfortable truth: we dislike accepting that the current systemic crisis is a systemic pathology. In consequence, One Health is about a triple, integrated, and reciprocal health of ecosystems, societies, and people. The Rapport Lancet Commission / Oslo University stated in 2014 – In a society based on social justice and ecological responsibility, health is a precondition, outcome, and indicator of a sustainable society, and should be adopted as a universal value and shared social and political objective for all. Perceived in this way, health is not negotiable. This work argues that in societies embracing systemic health, reversing the business-as-usual logic becomes possible. The work equally claims that this is a chance for Mankind, and explains why nature, food systems, and rural communities are meant to benefit in the first place. One Health is at the same time an instrument allowing to better define and operationalize what and how to measure the ingredients of One Health. In doing so, One Health puts a diagnosis on the pathology: social and ecological debt combined. The outcome is the development of sets of indicators that enable the amortization of consumed social and ecological capital. Biomass is a good example. A healthy agriculture, a healthy food system are expected to close the gap between humans and nature, between ecosystem critical functions and vital services.

Taken together, these considerations open the conversation on the actual means mobilizing the entire society, locally and globally, to put One Health to work.

# The use of homeopathy in the agroecosystem and the One Health concept

**Ileana RÎNDAȘU[1], Leonardo Felipe FAEDO[2]**

*CMI Dr. Ileana RÎNDAȘU[1], Traian 139-141, Bucharest, Romania*

*[2]Centre for Agroecology, Water and Resilience, Coventry University, Coventry, United Kingdom*

*Corresponding author email: ileana2.r@gmail.com*

**Abstract**

The concept of One Health, a unifying approach that aims to sustainably balance and optimize the health of people, animals, and ecosystems, recognizes that the health of humans, animals, plants, and the environment is closely linked and interdependent. The approach mobilizes multiple disciplines and communities to collaborate, and homeopathy, when used in agriculture, could be among the most effective disciplines for achieving the goals of One Health strategies. The paper describes the use of Homeopathy in agriculture, a science and method that can be integrated into this unifying approach, as it employs the same medicinal products for humans, animals, and plants. It is based on the interconnectedness of the elements of an agroecosystem. At the same time, homeopathic preparations work and reestablish the homeostasis of the living organisms at very small doses, meaning they produce no harmful effects to the environment and are efficient and economical, offering one of the best possibilities for the three pillars of the One Health Approach (people, animals, environment) and for sustainable agriculture.

**Keywords**: One Health, homeopathic preparations, agroecosystems.

# Exploring cancer bush-microbial interaction and its implications on sustainable commercialization

**Thobile MKHWANAZI, Zakheleni DUBE, Terence SUINYUIY**

*University of Mpumalanga, Private Bag X11283, Mbombela, 1200, South Africa*

*Email address: thobile.mkhwanazi@ump.ac.za*

**Abstract**

Cancer bush (*Sutherlandia frutescens*) (L) R. Br.) is a highly valued medicinal plant that is native to Southern Africa, used as a treatment for several human illnesses. Due to increasing market demand and threats from overharvesting and habitat destruction to natural populations, it has been classified on the National Red List of South African Plants as a species of ‘‘concern’’ and further recommended by the South African government for conservation action. To preserve the plant and mitigate the risk of future extinction, commercialization supported by scientific research is essential. This will help in understanding its ecological and biological systems, which will assist in sustainable commercialization and in developing a comprehensive conservation strategy that integrates the development and use of microbial inoculants and soil management. The current study explored (1) the microbial diversities associated with cancer bush, particularly focusing on root nodulating bacteria from two natural populations in Limpopo Province (Tubatse and Makgupheng) across winter and summer seasons, and (2) to determine microbial enzyme activities on N fixation, C-cycling, and P solubilization together with the potential of edaphic factors in influencing the above processes. Forty-nine (49) distinct bacterial morphological taxa were identified. Of the 49, only 23 were successfully characterized into 10 genera, including *Rhizobium*, *Bacillus*, *Stenotrophomonas, Alcaligenes, Kosakonia, Enterobacter, Leucobacter, Sphingobacterium, Cellulosimicrobium,* and *Serratia*. Tubatse had greater microbial richness and more favorable soil conditions (neutral pH, higher calcium, magnesium, potassium, ECEC, and clay content), whereas lower values were observed in Makgupheng (acidic-neutral pH). Seasonal variation also influenced microbial abundance, with warmer and wetter conditions supporting higher microbial activity. In conclusion, the understanding of microbial and ecological systems of the cancer bush is essential for its sustainable commercialization. Moreover, an integrated approach that combines habitat protection, soil management, and microbial inoculants can enhance its growth, resilience, and long-term availability.

**Keywords**: Conservation, medicinal plants, plant-microbe interactions, plant adaptation, *Sutherlandia frutescens.*

# Nematode challenges affecting smallholder vegetable producers in Ehlanzeni district, Mpumalanga, South Africa

**N.M. NOBELA[1], Z. DUBE[2] and G. TEFU[3]**

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**Abstract**

Smallholder vegetable farmers in Ehlanzeni District, South Africa, face serious challenges in crop production, with nematode infestation identified as a key issue. These microscopic worms, which cause significant yield losses, are largely unknown to farmers, with 80% unaware of their impact. A study assessing nematode presence and farmer knowledge across 15 farms in Mbombela, Nkomazi, and Umjindi municipalities revealed that the ten most common damaging plant parasitic nematode species were extracted and observed from the ARC laboratory using the sugar floatation method *(Meloidogyne sp., Pratylenchus sp., Xiphinema sp., Paralongidorus sp., Tylenchorhynchus sp., Rotylenchulus sp., Helicotylenchus sp., Scutellonema sp.*, *Paratrichodorus sp., and Hemicycliophora sp*. Most farmers misattributed symptoms such as yellowing and wilting to nutrient deficiencies or drought. Only 13.33% recognized nematodes as a threat, and 93.33% had no management strategies in place. Extension services for nematode control were almost nonexistent, despite most farmers seeking assistance with other issues such as soil fertility, pests, and market access. Organic methods were favored for affordability and soil health, while nematicide use was limited. The study highlighted the need for Integrated Pest Management (IPM) strategies, including crop rotation, resistant cultivars, and organic amendments. It also emphasized the importance of education, training, and improved extension support. Given an aging farmer population and minimal youth involvement, future efforts should focus on affordable, accessible nematode management solutions and on raising awareness to sustain vegetable production and food security in rural communities.

**Keywords:** nematodes, smallholder, vegetable producers, Ehlanzeni

# Potential of *Meyerozyma caribbica* and *Trichoderma virens* as a biostimulant for onion (*Allium cepa* L.) production

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**Abstract**

Onion (*Allium cepa* L.) is one of the most economically important vegetable crops worldwide, recognized for its nutritional value and storage potential. Their biochemical composition and physiological condition influence the quality and storage longevity of onion bulbs. This study aimed to evaluate the effects of the yeast *Meyerozyma caribbica* strain BBJ and the fungus *Trichoderma virens* strain DAR7 on the chemical composition and potential storage quality of onion bulbs. The experiment was conducted on the onion cultivar 'Stuttgarter Riesen' with three treatments: *M. caribbica, T. virens,* and an untreated control. Each variant comprised three replicates of 200 onion plants, for a total of 600 onion plants per variant. The inoculum was prepared by adding a 48-hour-old culture of *M. caribbica* and a 7-day-old culture of *T. virens* to a liquid nutrient broth. Cultivation was performed at 28 °C under continuous shaking (150 rpm) and spontaneous aeration for 72 hours. The prepared suspension was adjusted to a concentration of $1 \times 10^7$ spores $mL^{-1}$. Before planting, onion bulbs were immersed in the prepared yeast/fungi suspension to achieve initial colonization. During the vegetation period, three foliar treatments were applied at monthly intervals, each at the same spore concentration. The results showed that the application of *M. caribbica* increased onion bulb yield by 33%, whereas *T. virens* increased it by 50% relative to the untreated control. The qualitative parameters analyzed indicated a moderate improvement in the quality of treated bulbs in the variant with *M. caribbica*: dry matter and total soluble solids content increased by approximately 5%. In the variant treated with *T. virens*, both total dry matter and total soluble solids content decreased by approximately 12%. Ash content did not decrease significantly in the treated groups compared with the control, suggesting that the application of the bioagents did not adversely affect mineral composition. The results demonstrate that *M. caribbica* not only improves onion bulb quality parameters, particularly those related to postharvest stability and storage potential, but also increases bulb yield, indicating a strong biostimulatory effect. These findings emphasize the dual benefits of this yeast in onion production and confirm its potential as a sustainable biostimulant for agricultural applications. The variant treated with *T. virens* exhibited a relatively high moisture content, indicating that the bulbs are less suitable for long-term storage and more appropriate for short-term storage after harvest.

**Keywords:** *Meyerozyma caribbica, Allium cepa*, *Trichoderma virens,* biostimulation

**Acknowledgment:** This research was financed by the Ministry of Science, Technological Development, and Innovation of the Republic of Serbia under contracts No. 451-03-137/2025-03/200117 and 451-03-136/2025-03/200117.

# Effect of *Meloidogyne incog*nita and *Pseudomonas syringae* pv tomato and interventions on the growth, physiology, and gas exchange in infected tomato plants.

**Hamilton PHARASI**

**Abstract**

Root-knot-nematode, *Meloidogyne incognita* (RKN) and *Pseudomonas syringae* pv. tomato (Pst) infections pose significant threats to tomato production. Co-infection dynamics and their effects on plant physiology remain poorly understood. We evaluated growth and gas exchange in tomato (cv. Heinz) under greenhouse conditions in a randomized complete block design (RCBD), with data analyzed by ANOVA following single and co-inoculation with RKN and Pst. Fruit mass and fruit diameter were not significantly affected ($p > 0.05$). However, significant reductions ($p \leq 0.05$) were observed in total soluble solids, plant mass, stem diameter, fruit number, and height as physiological metrics, particularly under RKN single infection. A single infection with Pst did not differ significantly from the control ($p \leq 0.05$). Nematode indices revealed a significant increase in egg mass and root growth index for co-infected plants (RKN+Pst) and RKN –infected plants ($p \leq 0.05$), though root mass remained unaffected. Initial gas-exchange measurements using a LI-6400XT portable photosynthesis system showed no treatment effects. Still, follow-up readings indicated a suppressed photosynthetic rate (A) and elevated internal $CO_2$ concentration (Ci) ($p \leq 0.05$), with no changes in evapotranspiration (E) or stomatal conductance (gws). Notably, evapotranspiration directly influenced stomatal conductance, whereas photosynthetic decline and enzyme activity in RKN-Pst and single-Pst treatments underscored synergistic pathogenicity. Results suggest RKN infection critically suppresses tomato growth, while co-infection amplifies photosynthetic dysfunction. Gas exchange dynamics suggest that compensatory mechanisms for Ci and A may fail under sustained stress. This work advances understanding of plant-pathogen interactions and highlights the need for integrated management strategies against nematode-bacterial co-infections in tomato systems.

# First report of *Fusarium solani* and *F. equiseti* in an organic kiwifruit orchard from Romania

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**Abstract**

Originating in China, kiwifruit is less common in Romania, although environmental conditions are favourable for this crop. It can also be easily cultivated in organic systems, with no specific diseases or pests identified to date. In a research and demonstration kiwifruit orchard in Movilița, Constanța County, the concomitant presence of *Fusarium spp*. and nematodes in the soil was identified in 2023. The affected plants exhibited characteristic disease symptoms, including progressive wilting and browning of tissues, ultimately leading to their death. Disease incidence was high on plants of *Actinidia arguta*, *A. deliciosa*, and *A. chinensis*, and in 2024 and 2025, symptoms continued to appear. The analyses confirm the presence of *Fusarium solani* and *Fusarium equiseti*, as well as some nematodes from the family Haplolaimidae, namely *Xiphinema pachtaicum* and *Pratylenchus sp*., excluding *P. penetrans* and *P. vulnus*. In Romania, this is the first report of the presence of *Fusarium* and nematode species in an organic kiwifruit orchard, indicating a pathogenic complex with severe consequences.

**Keywords**: soil-borne diseases, fungi, nematodes, *Actinidia spp*

# Chemical compounds with therapeutic potential from the species *Solidago canadensis* L., grown in the Republic of Moldova

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**Abstract**

This study aimed to investigate the chemical compounds with therapeutic potential in *Solidago canadensis* L. (Canadian goldenrod) grown in the Republic of Moldova. Although *S. canadensis* is primarily known as an invasive plant, numerous studies are now highlighting its medicinal profile, owing to a wide range of chemical constituents, particularly phenolic compounds, saponins, and volatile oils. The phytochemical data revealed that extracts of the aerial parts of Canadian goldenrod are characterized by the following values for key secondary metabolites: total polyphenol content – 96.40 mg GAE/g DW, flavonoids – 66.4 mg RE/g DW, and saponins – 500 mg SE/g DW. Analysis of volatile oils in the flowering aerial parts identified monoterpenes and sesquiterpenes as the dominant hydrocarbon groups, with the major constituents as follows: limonene (22.81%), germacrene D (19.73%), and α-pinene (19.03%). These compounds exhibit strong antioxidant, anti-inflammatory, antimicrobial (phenolic compounds and volatile oils), and diuretic activities (saponins and flavonoids). The presence of diverse classes of bioactive compounds within *S. canadensis* suggests the potential for tailored medicinal use, with each group of constituents contributing to distinct therapeutic outcomes.

**Keywords**: chemical compounds, *Solidago canadensis*, therapeutic potential.

# Biochemical heterogeneity in seedling-grown *Argania spinosa* orchard: toward improved oil and by-product quality

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## Abstract

*Argania spinosa* L. (Skeels) is a threatened sapotaceous species endemic to west-central Morocco, known for producing one of the world's most valued oils due to its cosmetic, nutritional, and medicinal properties. This study assessed the biochemical variability of raw almonds from 11 distinct tree sources, grown under uniform environmental and agronomic conditions, to isolate genetic effects. Fatty acid profiles were determined via GC-FID, protein content through Kjeldahl analysis, free amino acids by LC-MS/MS, and elemental composition by ICP-OES. Variation was observed across tree sources for most biochemical and mineral traits. Oleic and linoleic acid contents ranged from 40.6% to 53.2% and 25.8% to 36.6%, respectively. Protein content ranged from 19.4% to 22.4%. Alanine peaked at 7.25% but was absent in some samples. Glutamic acid ranged from 2.31% to 4.23%, and aspartic acid from 1.61% to 3.06%. For minerals, high levels were found for Calcium and Potassium, ranging from 1488 to 3011 mg/kg and 3756 to 4825 mg/kg, respectively. High coefficients of variation were found for copper (49.3%), iron (20.2%), and calcium (19.4%). The biochemical composition of almonds suggests a strong genetic influence and directly influences both the quality of argan oil and the value of its by-products. These results emphasize the importance of selecting elite genotypes for clonal propagation to ensure consistent oil quality, sustainable cultivation, and independence from exploitation of the wild argan forest.

**Keywords:** arganiculture, almonds, biochemical variability, variety selection, seedling orchard, oil quality.

# SPOBS (Observed Species): a mobile digital architecture for advanced biodiversity monitoring and non-chemical pest management

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**Abstract**:

SPOBS is a mobile application designed to streamline biocontrol observations in organic agriculture by digitizing and standardizing field data. This study presents the application's architecture, which integrates automatic geolocation, timestamping, and a preloaded taxonomic database, enabling rapid specimen recording and assignment of relevant ecological (utilitarian) functions. The application's features include contextual fields, photo attachments, and collaborative cloud work, thus facilitating structured data collection from multiple observers. Testing in an experimental orchard demonstrated reduced transcription errors, automated data aggregation, as well as advanced filtering and export capabilities to external platforms for analysis. The conclusions highlight that SPOBS provides IPM specialists with a precise working tool, supporting decision-making and reducing pesticide reliance through rigorous management of field information.

**Keywords**: mobile, application, software, biocontrol, organic, IPM, field data, recording, cloud, standardization.

# Optimizing commercial nitrogen-fixing bacteria rates on nodulation and growth of Bambara groundnut (*Vigna subterranea* (L). Verdc)

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**Abstract**

Nitrogen in the soil is crucial for legume growth and productivity, thus influencing biomass development and yield potential. Bambara groundnut, *Vigna subterranea* (L.) Verdc. is an African underutilized legume of high nutritional value that can form a symbiotic relationship with rhizobia, thereby fixing atmospheric nitrogen. Increasing costs and environmental impacts of chemical fertilizers have increased the need for more sustainable alternatives, such as biological nitrogen fixation using commercial nitrogen-fixing bacteria. Hence, this study aimed to determine the optimal inoculation rate of *Bradyrhizobium japonicum* and *Rhizobium meliloti* to enhance nodulation and growth in various Bambara groundnut landraces. The current study was conducted under greenhouse conditions, with treatments arranged in a 2×3×5 factorial design and a randomized complete block design, with 5 replications. Two bacterial inoculants, *Bradyrhizobium japonicum* and *Rhizobium meliloti*, were compared with a control (Uninoculated seeds) across three Bambara groundnut landraces (Red, Brown, and Brown with black eye) under five bacterial concentrations ($5\times10^{6}$–$5\times10^{10}$ CFU/seed). Results indicated that bacterial inoculation significantly increased chlorophyll content, leaf number, biomass, and plant vigor compared with controls without inoculation ($p < 0.05$). *Rhizobium meliloti* was the most effective at improving growth and nodulation, and an inoculum of $5 \times 10^{7}$ CFU/seed was identified as the optimal inoculation rate. The red landrace showed the greatest nodulation and growth response. This study, therefore, identifies the application of *Rhizobium meliloti* at a rate of $5 \times 10^{7}$ CFU/seed as greatly improving Bambara groundnut yields, an environmentally friendly and sustainable alternative to chemical fertilizers, which would help improve the production of smallholder farmers and food security in Sub-Saharan Africa.

**Keywords**: Bambara groundnut, *Bradyrhizobium japonicum*, *Rhizobium meliloti*, nitrogen fixation, nodulation, sustainable agriculture.

# Physicochemical and sensory analysis of several cultivars and new apricot hybrids

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**Abstract**

Modern fruit production urgently requires the development of new cultivars that balance high fruit quality and yield with consumer acceptability and the essential resilience and adaptation needed to address the challenges posed by climate change. This study aims to identify the best apricot genotypes, including both hybrids and traditional cultivars, based on multiple selection criteria. A comparative evaluation was conducted on a large pool of 50 apricot cultivars/hybrids, all grown under homogeneous agronomic conditions, focusing on physicochemical and sensory analyses. Advanced statistical techniques were applied, including correlations, hierarchical clustering, the Friedman test on sensory data, and PLS (Partial Least Squares). The PLS analysis indicated that titratable acidity is the most significant physicochemical predictor of overall sensory acceptability, underscoring the critical role of taste balance in consumer preference. This study supports the targeted selection of new apricot hybrids that combine high fruit quality with phenotypic traits necessary for stable, sustainable production in an evolving environment.

**Keywords**: R1P11, R1P2, R1P19, Olimpia, Swired, Orizont

# Impact of biostimulants on root formation and development in *Actinidia arguta* cuttings

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**Abstract**

This study aimed to determine the rooting percentage and root system characteristics of *A. arguta* cuttings taken from the experimental fields of the Faculty of Horticulture in Bucharest. Cuttings from various genotypes were treated with rooting stimuli (AIB+ANA and Raiza Mix) to induce root formation. Rooting success is a critical parameter for identifying and implementing the most effective propagation protocols. Following the rooting phase, the root systems of successful cuttings were analyzed using specialized WinRhizo software. This analysis provided detailed indicators of root development, including total root length, root volume, surface area, and root diameter distribution. Results indicated that hormonal treatments significantly increased the rooting percentage across all tested genotypes. Furthermore, detailed WinRhizo analysis revealed significant genotypic differences in root development, a key indicator of future field performance and plant adaptability. In conclusion, genotypes that demonstrated both high rooting success and an extensive, vigorous root system (as measured by WinRhizo) are most suitable for planting in pots or in the field.

**Keywords**: growth stimulants, genotypes, software analysis, vegetative propagation

# The combination of a consortium of arbuscular mycorrhizal fungi with reduced doses of fertilizers enhances the growth and yield of vegetable crops in southern Benin

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**Abstract**

The study aimed to enhance the growth and yield of tomato (*Solanum lycopersicum*) and round pepper (*Capsicum annuum*) by applying arbuscular mycorrhizal fungi in combination with reduced doses of mineral fertilizers in southern Benin. The experiment was conducted using a completely randomized block design comprising five treatments, including the control. It was established across nine experimental sites in three zones, with a minimum distance of 1 km between sites. The treatments were: AMF alone, AMF + 25% fertilizer, AMF + 50% fertilizer, and 100% fertilizer (conventional practice). Growth parameters were assessed at the end of the vegetative phase (70 days after sowing), while yield parameters were collected at harvest (100 days after sowing). The results showed a significant improvement ($p < 0.001$) in plant height and stem diameter under the AMF + 50% fertilizer treatment, with performance comparable to that under the 100% fertilizer treatment. In addition, yield parameters, including fruit yield, biomass components, and the weight of ten fruits, were significantly enhanced ($p < 0.001$) under AMF + 25% fertilizer, AMF + 50% fertilizer, and 100% fertilizer compared to the control. Overall, the findings highlight that combining arbuscular mycorrhizal fungi with reduced fertilizer inputs represents a sustainable strategy for improving vegetable crop productivity. This approach simultaneously reduces reliance on chemical inputs, preserves environmental quality, and contributes to food and health security.

**Keywords:** mycorrhizae, plant height, ten fruits weight, significant improvement, sustainable agriculture.

# Green-synthesised nanoparticles for the management of *Meloidogyne incognita* and enhancement of plant growth under greenhouse conditions

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**Abstract**

Conventional nanoparticle synthesis methods rely on metal salts along with chemical reducing and stabilising agents, posing environmental risks and long-term impacts on agroecosystems. In contrast, green synthesis of nanoparticles using plant extracts as reducing and stabilising agents is a promising approach. *Aloe vera* gel, known for its bioactive components such as polysaccharides, flavonoids, and polyphenols, which simultaneously reduce metal ions and sterically stabilize nascent particles, has emerged as a promising candidate for nanoparticle synthesis. Hence, the present study explored the use of green-synthesized nanoparticles to manage *Meloidogyne incognita* and enhance plant growth parameters. A factorial experiment was conducted using extracts from *Lantana camara* and *Tabernaemontana elegans*, six nanoparticle formulations at three application rates, with five replications. Results showed that increasing the concentration of *Aloe vera* in the nanoparticle formulation significantly reduced nematode juvenile populations in plant roots. In particular, nanoparticles at 50:50 and 25:75 concentrations were most effective in this regard, compared with other treatments. The application of nanoparticles directly influenced key plant growth parameters. This study is the first to report the use of *A. vera* gel in the green synthesis of nanoparticles derived from *T. elegans* and *L. camara*, highlighting its potential for sustainable nematode management.

**Keywords**: *Lantana camara*, *Tabernaemontana elegans*, nanoparticles, reducing, stabilizing

# Response of *Vitis vinifera* to *in vitro* virus eradication techniques

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**Abstract**

This review explores *in vitro* eradication techniques for *Vitis vinifera*, an economically vital fruit crop that is severely affected by viral diseases. Critical pathogens, easily spread by grafting, cause substantial 20%-80% yield losses. The production of virus-free plantlets relies on *in vitro* methods, such as meristem cultures, micrografting, thermotherapy, chemotherapy, and cryopreservation, or combinations thereof. Historically, simple meristem culture and thermotherapy represented the standard. Thermotherapy remains a reliable pre-treatment, ensuring viral clearance of GLRaV-1 and GLRaV-3 after ≥12 days at 37.2°C. Current literature favors advanced, multi-component therapies. Cryopreservation of shoot tips is efficient, achieving up to 97% elimination of GVA. Additionally, chemotherapy offers an alternative that relies on compounds such as ribavirin (RBV) and tiazofurin (TR), which successfully eradicate GRSPaV. Furthermore, dual chemotherapy has achieved 100% elimination of GFkV, demonstrating complete sanitation. In summary, modern *Vitis vinifera* virus management utilizes targeted, multi-modal in vitro strategies.

**Keywords:** chemotherapy, cryopreservation, thermotherapy, virus eradication, *Vitis vinifera*.

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# ENVIRONMENT HEALTH AND CLIMATE CHANGES

# Forest health in a changing climate: comparative assessment of defoliation trends in Romanian and Serbian forests

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**Abstract**

This study examines forest health dynamics in Romania and the Republic of Serbia between 2020 and 2024, focusing on crown condition and defoliation trends within the ICP Forests monitoring framework (Level I). Annual defoliation data, by species and defoliation class, were compared with climatic variability using the De Martonne Aridity Index. Results indicate moderate interannual fluctuations in defoliation, with Romania exhibiting mean defoliation levels of 15-16% and Serbia maintaining over 80% of trees in non-defoliated classes. Broadleaved species such as *Populus spp*. and *Quercus spp*, showed the highest defoliation rates (up to 40%), while *Fagus sylvatica* (L.), *Abies alba* (Mill.), and *Picea abies* (L.) Karst. demonstrated greater resilience. A negative correlation was identified between aridity index values and defoliation intensity, with drier years (2022, 2024) associated with increased crown damage. Biotic stressors, particularly insects and fungi, amplified defoliation under dry conditions. The findings highlight the influence of climatic aridity on forest vitality and underscore the importance of integrated monitoring to support adaptive forest management in the Carpathian-Balkan region.

**Keywords**: aridity, comparative assessment, defoliation, Romania, Serbia

# Spatial analysis of green infrastructure in Cluj-Napoca and its implications for urban air quality

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**Abstract**

This study investigates the distribution and surface area of green spaces in the city of Cluj-Napoca, aiming to assess their impact on air quality. Geospatial data were obtained through the Copernicus platform, including information on green areas, built infrastructure, the hydrographic network, and other relevant components of the urban environment. These datasets were integrated and processed in AutoCAD, where spatial analyses were carried out to accurately delineate vegetated areas and evaluate their distribution across the city. Based on these analyses, the green space per capita indicator was calculated, providing insight into urban sustainability and the contribution of vegetation to air quality. Beyond the quantitative assessment, the study formulates evidence-based recommendations for the expansion and optimization of green spaces in areas identified as vegetation-deficient. These proposals aim to enhance ecological connectivity, improve air quality, and strengthen the resilience of the urban environment. The findings underscore the critical role of continuous monitoring and strategic planning of green infrastructure, highlighting the interdependence between urban development, ecosystem health, and population well-being.

**Keywords**: green space, urban sustainability, Autocad

# Agroforestry in crop systems and its influence on the chemical fertility of soils in semi-arid regions: Case of the Dahra foothills (North-West, Algeria)

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**Abstract**

To ensure a stable supply of healthy food, new techniques for maintaining and enhancing the natural production capacity of agricultural land must account for the specific environmental conditions. However, the identification and valorization of all local dynamics of production systems must ensure the conservation of agricultural land fertility and the management of fertilizer use. This study aims to evaluate the physicochemical quality of soils in the north-western foothills of Dahra. After a bioclimatic overview of the study area, out of the fourteen studied stations, four of the most practiced farming systems (agroforestry, non-irrigated tree crop cultivation, annual field cropping, and fallow cultivation) were compared based on analyses of various indicators related to the physico-chemical properties of soils used in the literature concerning soil chemical fertility. Indeed, the studied soils exhibit a clay-loam and sandy-loam texture, a slightly acidic pH, and an organic matter content that warrants improvement to enhance biological activity. To optimize soil fertility, the use of green manures as a source of major elements (N, P, and K) would be desirable in the studied crop rotations. The results showed that lands in the north-western foothills of Dahra are naturally suited to agriculture and are conducive to promoting agro-ecological practices, particularly agroforestry. This will improve soil health by enhancing biodiversity and improving resource use efficiency. Additionally, biological fertility measures offer greater opportunities for sustainable agriculture in semi-arid environments, where agroforestry practices and green manures effectively increase organic matter content, biofertility, income diversity, and the standard of living for farmers.

**Keywords:** Agroforestry systems, chemical fertility, foothills, Dahra, semi-arid regions.

# Phytochemical characterization of *Solanum mauritianum* and *Tagetes minuta* extracts

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**Abstract**

Excessive pesticide use has led to increased pest resistance and environmental degradation, reducing viable pest management options. The prohibition of hazardous nematicides, such as methyl bromide, in South Africa underscores the urgent demand for environmentally safe pest control alternatives. In this context, rapidly growing and widely available plants like *Solanum mauritianum* and *Tagetes minuta* are being investigated for their potential as natural pest control agents. This study, conducted at the University of Mpumalanga's Mbombela campus, involved phytochemical analyses of *S. mauritianum* and *T. minuta* shoots using Gas Chromatography-Mass Spectrometry. GC-MS results revealed 146 phytochemicals across both species. In *S. mauritianum*, key compounds during the reproductive stage in the acetone extract included spathulenol, phytol, caryophyllene oxide, and 2-pentadecanone. In contrast, the vegetative stage showed slightly lower concentrations of these compounds, along with tetracosane. Hexane extracts of this species were characterized by spathulenol, phytol, and caryophyllene oxide. For *T. minuta*, acetone extracts during the reproductive stage contained spathulenol, cyclotetracosane, caryophyllene oxide, and 2-pentadecanone, whereas hexane extracts exhibited spathulenol, caryophyllene oxide, and phytol. At the vegetative stage, acetone extracts were dominated by spathulenol, caryophyllene oxide, and phytol, whereas hexane extracts showed similar profiles. Acetone extraction yielded a broader range of compounds, including alkanes and oxygenated sesquiterpenes, whereas hexane was more effective at isolating lipophilic constituents such as phytol. These phytochemicals underscore the plants' inherent pest resistance and support their potential as sustainable, eco-friendly alternatives to synthetic pesticides. Their diverse chemical profiles warrant further investigation for applications in integrated pest management.

**Keywords**: phytochemicals, extracts, abundance, species.

# Shared strategies for survival: a comparative analysis of leaf dry mass suggests similar drought tolerance traits within Taxodiaceae species under urban conditions

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**Abstract**

Urban environments expose trees to intense drought stress due to elevated temperatures and reduced soil moisture. Identifying woody drought-resistant species is essential for sustainable landscaping. This study assessed leaf dry-matter content (LDMC) as an indicator of drought tolerance in three species from the former Taxodiaceae (now Cupressaceae) family - *Metasequoia glyptostroboides*, *Taxodium distichum*, and *Sequoiadendron giganteum*, growing in urban settings in the city of Sofia, Bulgaria. Leaf samples were collected from mature trees in different sites. Results did not show significant interspecific differences, although slight numerical variation in LDMC was observed among the species. These findings suggest that under the conditions studied, the species share similar physiological investment in leaf dry matter, indicating comparable levels of drought resistance. This may be due to shared adaptive strategies to urban stress or insufficient divergence in structural leaf traits under the prevailing environmental conditions. Overall, LDMC proved to be a practical and reliable proxy for assessing drought resistance and could be used to select appropriate conifer species for urban areas.

**Keywords**: leaf dry-matter content, drought resistance, urban trees, Cupressaceae, Bulgaria

# The benefits of sheep wool waste in the absorption of indoor air pollutants

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**Abstract**

Sheep wool, once a valuable raw material for the textile industry, is now often regarded as agricultural waste due to declining demand. However, it offers significant potential for sustainable use in environmental applications, particularly as a natural adsorbent for indoor air pollutants. The unique keratin-based structure of wool — characterized by its high surface area, porosity, and functional groups such as amide and disulphide bonds — enables strong chemisorption and physisorption processes. These properties make wool an effective natural adsorbent for volatile organic compounds (VOCs) and other air pollutants, including formaldehyde, sulphur dioxide ($SO_2$), and nitrogen oxides (NOx). Recent studies have demonstrated the effective utilization of wool waste in the construction industry, where it is used to manufacture thermal insulation mattresses, passive filters, and polymer composites. These materials can improve indoor air quality (IAQ) by reducing pollutant levels by 94–96% within a short time, while also providing excellent thermal insulation (0.03–0.04 W/mK) and sound absorption properties. Beyond its technical advantages, the use of wool waste has a positive impact on environmental sustainability. It reduces landfill waste, decreases greenhouse gas emissions associated with synthetic materials, and supports the circular economy through wool's renewable and biodegradable properties. This paper highlights the potential of sheep wool waste as a natural adsorbent for various pollutants, emphasizes the importance of large-scale recycling of this material, and explores the development of innovative wool-based composites that offer both environmental and functional benefits.

**Keywords:** air pollutants, environment, volatile organic compounds, wool waste, recycling.

# Efficacy of the native entomopathogenic nematodes (EPN) on the survival of *Ceratitis capitata*

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**Abstract**

*Ceratitis capitata* (Wiedemann, 1824) (Mediterranean fruit fly) is one of the most economically damaging fruit pests worldwide, causing significant yield losses and trade restrictions. Despite the presence of both native and non-native entomopathogenic nematodes (EPNs) in South African soils, indigenous species remain underexplored for use in pest management programs. The objective was to evaluate the efficacy of two indigenous isolates of *Steinernema jeffreyense* and *Heterorhabditis bacteriophora* against the larval and pupal stages of *C. capitata* at concentrations of 0, 25, 50, 75, and 100 infective juveniles (IJs) per 50 µL per larvae, and 0, 100, 150, 200, and 250 IJs per 50 µL per pupae, under laboratory conditions. The two trials, larval and pupal, were arranged in a 2 × 5 factorial experiment laid out in a completely randomized design with five replications. The first factor consisted of the two EPNs, *S. jeffreyense* and *H bacteriophora*, while the second factor was concentration at five levels as stated above. Both trials were repeated twice to validate the observations. Variables measured included larval and pupal mortality, mortality rate, EPN infectivity, and the number of pupae following larval exposure. There were no significant interactions between EPN and concentration on all measured variables for the larval trial, while all variables in the pupal trial had highly significant interactions. Overall, both species caused larval and pupal mortality across treatments, with *H. bacteriophora* performing better than *S. jeffreyense*. Larval and pupae mortalities were concentration dependent, with the highest larval and pupal mortalities relative to the negative control observed at the EPN concentrations of 25 IJs and 250 IJs, respectively. These findings suggest that indigenous isolates of *H. bacteriophora and S. jeffreyense* are promising candidates for the biological control of *C. capitata*. Future studies should validate these results under field conditions, assess nematode persistence in different soil types, and explore formulation improvements to enhance integration into sustainable fruit fly management programs.

**Keywords**: *Ceratitis capitata*, entomopathogenic nematodes, *Steinernema jeffreyense*, *Heterorhabditis bacteriophora*, biological control, larval mortality, pupal mortality

# Economic impact of air pollution on health and productivity in Małopolskie Region, Poland (2013-2018)

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**Abstract**

Particulate matter pollution in the Małopolskie region of Poland has been causing serious problems for both human health and the regional economy. Using data from 2013 to 2018 (air quality from the European Environment Agency and health records from Eurostat), we aimed to understand the actual scale of impact. Cognitive decline was estimated using exposure-response data from other studies (Zhang et al., 2018). Evidence from the study suggested that WHO guidelines were being exceeded significantly. PM2.5 averaged 5-7.7 times the recommended level, and PM10 was approximately 2.6-3.1 times the recommended level. Deaths from respiratory causes went up 23% by 2018 compared to 2013, and hospitalizations increased by about 26%. Poland's aging population explains much of this trend. The economic side was striking: lost productivity due to cognitive impairment amounted to approximately €1.18 billion, accounting for most of the total economic cost (over 96%). Air quality policy clearly needs to address more than just immediate respiratory effects; the cognitive and productivity dimensions appear substantial and should not be ignored in policy planning.

**Keywords***:* air pollution, cognitive decline, economic impact, public health, respiratory disease.

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# ANIMAL WELFARE

# Phenolic-rich ethanolic extract of Kinkeliba (*Combretum micranthum*) mitigates DSS-induced ulcerative colitis in C57BL/6 mice

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## Abstract

**Background**: Inflammatory bowel diseases (IBD), including Crohn's disease and ulcerative colitis, are chronic inflammatory disorders of the gastrointestinal tract, and adverse side effects limit current therapies. *Combretum micranthum* G. Don (kinkeliba), a medicinal plant traditionally used in West Africa, has been reported to possess pharmacological activities and a favorable safety profile. **Methods:** An ethanolic extract of *Combretum micranthum* (EECM) was characterized using HPLC-DAD-ESI-MS to identify its phenolic constituents. Acute colitis was induced in C57BL/6 mice using 3% DSS, while EECM (100 and 200 mg/kg) was administered orally for seven days. Disease Activity Index was monitored daily, and colonic injury was evaluated through macroscopic and histological analyses, as well as hematological and biochemical assessments. **Results:** *In vitro,* EECM contained 293.54 mg/g of total phenolic compounds and showed strong antioxidant activity in DPPH, ABTS, and FRAP assays. Furthermore, the extract exhibited antibacterial activity against *Bacillus subtilis, Staphylococcus aureus, Salmonella enterica,* and *Streptococcus pyogenes* at various concentrations. In contrast, *Enterococcus faecalis, Escherichia coli,* and *Pseudomonas aeruginosa* were not affected at the tested concentrations. No antifungal activity was detected against the filamentous fungus *Aspergillus brasiliensis* and the yeasts *Saccharomyces cerevisiae, Candida parapsilosis,* and *Candida albicans. In vivo,* EECM alleviated the clinical signs of colitis, reduced histological damage, and modulated hematological and biochemical parameters. **Conclusion:** EECM exhibited significant antioxidant and anti-inflammatory activities and may represent a promising natural candidate for IBD management. Further investigations in chronic experimental models are necessary to establish its therapeutic relevance.

**Keywords:** *Combretum micranthum* G. Don; inflammatory bowel disease; DSS-induced colitis; phenolic compounds; HPLC-DAD-ESI-MS

# Environmental enrichment as a method of animal welfare in pig husbandry

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**Abstract**

This study examines environmental enrichment as a practical strategy to enhance animal welfare in modern pig husbandry. Environmental enrichment involves providing pigs with manipulable objects, such as ropes, toys, or wooden blocks, to promote natural behaviours and reduce stress-induced aggression and tail-biting. Using a comparative literature review approach, the paper synthesises experimental and applied research assessing behavioural and physiological responses to enrichment. Findings indicate that well-designed enrichment materials stimulate exploratory activity, reduce cortisol levels, and improve overall welfare without compromising growth performance. Economically, enrichment practices support productivity by reducing injury-related losses and aligning with EU welfare standards. In conclusion, environmental enrichment represents a sustainable and cost-effective tool that integrates animal welfare improvements with efficient farm management, promoting a more ethical and resilient pig production system.

**Keywords**: animal welfare, environmental enrichment, stress reduction, pigs.

# Zoonotic potential and model value of animal herpesviruses in human disease research

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**Abstract**

Herpesvirus infections are characterized by lifelong latency and pose a significant challenge to human health. Herpesviridae are double-stranded DNA viruses and are divided into the subfamilies Alphaherpesvirinae, Betaherpesvirinae, and Gammaherpesvirinae, infecting many vertebrates, from fish to mammals. Human herpesviruses (HHV-1 to HHV-8) are endemic in humans. However, many animal herpesviruses share similar biological and genetic traits, conferring both zoonotic potential and experimental value for modelling human disease. Most herpesviruses display strict species tropism; however, their common ancestry and conserved genome structure imply a latent ability to adapt to new hosts. Documented cross-species infections include macaque B virus, which may cause fatal disease in humans, and pseudorabies virus, which infects several domestic and wild mammals. Other viruses, such as Equine Herpesvirus and Marek's Disease Virus, remain primarily animal pathogens. Still, they are studied because of structural analogies to Epstein-Barr Virus or Kaposi Sarcoma Herpesvirus. Serological surveys among poultry workers have revealed anti-MDV antibodies in over 70% of farmers; this, however, may be due to cross-reactivity. Molecular testing has not revealed any evidence of MDV replication in humans, emphasizing this uncertainty. Nevertheless, animal herpesviruses are highly valuable research tools.

**Keywords:** Herpesviridae, cross-species transmission, zoonotic risk, animal models, viral latency

# Obesity as an etiological factor in mammary cancer in humans and dogs: a One Health approach – literature review

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**Abstract**

Obesity is a major metabolic disorder affecting both humans and companion animals, strongly associated with chronic diseases and reduced lifespan. In humans, it increases the risk of cardiovascular disease, diabetes, and hormone-dependent cancers such as breast cancer. Similarly, obese dogs show higher susceptibility to insulin resistance, osteoarticular disorders, and mammary tumors. The strong correlation between owner and pet obesity highlights shared behavioral and lifestyle factors, reinforcing the 'One Health' concept that integrates human, animal, and environmental health. Altered levels of leptin, adiponectin, and resistin contribute to metabolic imbalance, chronic inflammation, and tumor progression in both species. Moreover, increased peritumoral macrophage density in obese individuals is associated with poor prognosis. This literature review emphasizes obesity as a common oncogenic promoter in mammary tumors. It supports the use of dogs as a valuable translational model for understanding and managing obesity-related breast cancer.

**Keywords:** Obesity, mammary cancer, comparative oncology, One Health, translational model

# Clinical evaluation of Vetrix® EyeQ ™ Amniotic Eye Drops in the treatment of refractory corneal ulcers in dogs

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**Abstract**

**Introduction:** The therapeutic approach to corneal ulcers in dogs requires a different perspective, particularly in cases of lesions that are refractory to conventional therapies. From an etiological standpoint, several types of corneal ulcers can be distinguished, including spontaneous chronic corneal epithelial defect (SCCED), also known as an indolent corneal ulcer, which develops in the absence of an identifiable external factor; deep corneal ulcers; and melting corneal ulcers. Given the limitations of traditional treatments, a new therapeutic approach has been proposed using Vetrix® EyeQ Amniotic Eye Drops. This therapy has proven highly effective due to the use of a natural biological scaffold obtained by micronizing the amniotic membrane, which is recognized for its ability to modulate inflammation and promote rapid epithelialization.

**Materials and methods:** A group of 27 dogs was evaluated to assess the efficacy of the new therapy with Vetrix® EyeQ Amniotic Eye Drops at the University Emergency Veterinary Hospital Prof. Univ. Dr. Alin Bîrțoiu (Splaiul Independenței 105, Bucharest, Romania) during January 2023 to December 2024. The dogs underwent a complete ophthalmologic examination, which led to the diagnosis of corneal ulcer, encompassing the three etiological types (indolent, deep, and melting). In total, 34 eyes were affected, with lesions proving refractory to conventional treatment. The therapy with Vetrix® EyeQ Amniotic Eye Drops consisted of applying one drop three times a day to the affected eye, in combination with a local and/or systemic antibiotic.

**Results:** Therapy with Vetrix® EyeQ Amniotic Eye Drops achieved a success rate of approximately 88.9%. The duration of treatment until complete healing ranged from 3 to 12 weeks, depending on the species and age-specific characteristics of each dog. An essential aspect of using this product was the observation of the need to develop branched neovascularization at the corneal level, a process that significantly improved treatment effectiveness. In the case of indolent corneal ulcers, a primary step in stimulating neovascularization was debridement of the lesion with a cotton applicator, a procedure that could be repeated 2-3 times until blood vessels appeared.

**Conclusion:** This study highlights the efficacy of Vetrix® EyeQ Amniotic Eye Drops in the treatment of refractory corneal ulcers in dogs. The results obtained confirm the therapeutic potential of combining

amniotic cells with hyaluronic acid, demonstrating their ability to promote corneal regeneration, reduce inflammation, and prevent fibrosis. In conclusion, Vetrix EyeQ is a promising therapeutic option for managing refractory corneal ulcers in dogs, offering an effective, minimally invasive treatment.
**Keywords:** corneal ulcer, ulcer refractory to treatment, amniotic membrane suspension, dog.

# Subpalpebral ocular lavage system

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**Abstract**

Subpalpebral ocular lavage systems are an efficient, minimally invasive method for topical ophthalmic therapy in horses, enabling frequent, precise medication while minimizing patient discomfort. This retrospective study evaluated the effectiveness and tolerability of such systems in five equine patients treated at the University Veterinary Emergency Hospital "Prof. Dr. Alin Bîrțoiu" in Bucharest. The cases involved various ocular conditions, including corneal melting ulcers, secondary uveitis, congenital cataracts, and iridal melanomas, managed both medically and surgically. The system was installed following an auriculopalpebral nerve block and aseptic preparation. All patients tolerated the procedure well, enabling consistent medication delivery and improved therapeutic outcomes. The subpalpebral lavage technique proved to be a reliable, safe, and well-tolerated approach for long-term ophthalmic treatments and postoperative care in equine patients.

# An aquatic system multi-level evaluation using species-specific sensitivity bioindicators

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**Abstract**

Antibiotic contamination of freshwater environments can induce ecological imbalance by promoting resistant bacterial populations and threatening the health of aquatic organisms. This study evaluated the toxicity of tetracycline and co-trimoxazole using *Daphnia magna* and *Vibrio fischeri* as complementary bioindicators. Acute immobilization tests revealed $EC_{50}$ values of 57.10 mg/L for tetracycline and 44.76 mg/L for co-trimoxazole in *D. magna*, indicating significant sensitivity at concentrations relevant to environmental risk assessments. Bioluminescence assays showed that *V. fischeri* responded strongly to tetracycline, with $EC_{50}$ values in the 5–10 mg/L range, whereas co-trimoxazole exhibited lower bacterial toxicity, with $EC_{50}$ values between 50–100 mg/L. These differential responses demonstrate how antibiotics can affect distinct biological levels within aquatic ecosystems. They may promote conditions that favor antimicrobial resistance, particularly by disrupting microbial communities at subinhibitory tetracycline concentrations. The results highlight the need for monitoring strategies that integrate microbial and invertebrate endpoints to assess better the impacts of antibiotic pollution across trophic levels and ecological functions.

**Keywords**: Tetracycline, co-trimoxazole, aquatic toxicity, *Daphnia magna*, *Vibrio fischeri*, bacterial adaptability

# Use of an Algae-Based Feed Supplement in Pig Farming: Toward a « One Health » Strategy for Controlling Pathogenic and Antibiotic-Resistant *Escherichia coli* Strains

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**Abstract**

Intensive and inappropriate use of antibiotics in livestock promotes the selection of antibiotic-resistant bacteria, compromising therapeutic efficacy in both animals and humans. This study aimed to improve pork safety by evaluating the effect of an algae-based feed supplement on the resistance and virulence of *Escherichia coli* strains in piglets. Three groups were established: control group (A), piglets treated with the feed supplement (B), and piglets treated with tetracycline (C). Fecal isolates were identified, subjected to antimicrobial susceptibility testing by disk diffusion on Mueller-Hinton agar, and analyzed for resistance and virulence genes. In the control group, strains remained sensitive to imipenem, ciprofloxacin, amikacin, and colistin, with low resistance to most antibiotics except tetracycline (48 % at D0 and 41 % at D4). The feed supplement limited resistances, with tetracycline remaining the highest, while amoxicillin, streptomycin, and chloramphenicol showed minimal variation. In contrast, tetracycline treatment led to a marked increase in resistance, reaching 92.3% for tetracycline and 76.9% for amoxicillin at D4. Virulence gene analysis showed that, with the feed supplement, the prevalence of eaeA, st, and lt decreased from 50 %, 75 %, and 100 % to 0 % at D4. In tetracycline-treated piglets, eaeA, stx2, and lt decreased from 75 % to 46.6 %, 50 % to 40 %, and 75 % to 53.3 %, remaining significant at the end of treatment. Overall, administration of the algae-based feed supplement significantly reduced resistance and the prevalence of virulent *E. coli* strains, suggesting its potential for controlling antibiotic resistance and improving digestive health in pig farming from a "One Health" perspective.

**Keywords**: *Escherichia coli*, piglets, resistance, phenotypes, genes, algae, virulence, feed supplement

# Milk safety under emerging mycotoxin threats: current knowledge and future challenges from one health perspective

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**Abstract**

Milk safety remains a persistent challenge due to the presence of both regulated and emerging mycotoxins originating from contaminated feed consumed by dairy animals. While aflatoxin M1 (AFM1) is the only mycotoxin currently regulated in milk, recent studies report the occurrence of others, including enniatins, beauvericin, and zearalenone, whose toxicological relevance and transfer mechanisms remain insufficiently understood. These toxins, primarily produced by *Aspergillus* and *Fusarium* species, may persist during processing and pose health risks to consumers. This study provides an overview of current knowledge on the occurrence of regulated and emerging mycotoxins in milk and their associated risks, identifying key gaps and future research needs. Despite advances in monitoring and risk assessment, limited data on emerging mycotoxins and the lack of harmonized legislation continue to hinder effective control. Addressing milk safety under mycotoxin threats requires a comprehensive, interdisciplinary One Health approach that integrates environmental, animal, and human health aspects. Strengthening preventive measures at feed and farm levels, along with improved surveillance and regulatory alignment, remains essential for ensuring milk safety within a sustainable "farm-to-consumer" framework.

**Keywords**: aflatoxin M1, emerging mycotoxins, food regulation, milk safety, One Health

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# LANDSCAPE, GREEN AREAS AND FOREST FOR HEALTHY LIFE

# Integrative healing gardens: theory, history, legends, and practice

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**Abstract**:

All that exists derives meaning from the perspective of someone. The shared perception of individuals constitutes reality. For us, humans, the surrounding environment is human–centered. So, the Gardens. Any garden is healing by default! Starting with the Garden of Eden, up to a grandma watering her flowers, every garden does that. 'Healing' in the title refers to the extensive use of healing elements throughout the IH Garden: the garden's intent, the consecration of the land, plants known for their healing properties, (sacred) geometries, cleansing, healing, protection, and activating symbols. Crystal grids, elements, and protective gates are doing that. Everything in an IHG is meant to heal.

This paper offers a comprehensive, transdisciplinary overview of what humanity has created to date on this topic and surveys historical key points as contemporary applications. The conclusion positions the Integrative Healing Garden as a systems-level framework and a practical, scalable tool for 21st-century health, urban, and spiritual practice. It introduces it as the conceptual seed for a doctoral thesis and further applied research.

**Keywords**: integrative healing gardens, practical approach, applied spirituality, ancient knowledge, multi-scientific culture.

# Landscape interventions enhancing urban green space development in Târgu Frumos, Iași county, Romania

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**Abstract**

This paper presents a comprehensive landscape analysis and design strategy to enhance the development of urban green spaces in Târgu Frumos, Iași County, Romania. The study assesses the structure, distribution, and accessibility of existing green spaces, highlighting spatial gaps and opportunities for ecological and social improvement. Building on this evaluation, new green space proposals aim to strengthen ecological connectivity, improve environmental quality, and foster community health and well-being. The project focuses on integrating functional and aesthetic elements, emphasizing biodiversity-supportive plant palettes, recreational infrastructure, and sustainable landscape management practices. The design approach prioritizes multifunctionality, creating landscapes that combine leisure, ecological, and educational roles while promoting climate resilience and inclusivity. By incorporating local context, natural topography, and cultural identity, the interventions aim to establish a cohesive and adaptable green infrastructure framework that enhances environmental sustainability, fosters social interaction, and contributes to the long-term livability of Târgu Frumos within a sustainable regional development vision.

**Keywords**: urban green spaces, landscape design, connectivity, sustainable development, Târgu Frumos.

# Assessment of the environmental impact of amaranth on urban ecology and landscape management

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**Abstract**

Amaranth *(Amaranthus spp).* is a resilient, fast-growing crop valued for its adaptability to diverse environments, nutritional richness, and dual role as both an edible and ornamental plant. Its potential to enhance soil fertility, support biodiversity, and improve urban food systems makes it an ideal choice for promoting sustainable urban agriculture and landscape management. This study assessed the environmental impact of *Amaranthus spp*. within urban ecosystems, emphasizing their role in climate-resilient agriculture and landscape management. A completely randomized design was used to test two species, *Amaranthus cruentus* and *Amaranthus viridis*. Data collection included soil microbial activity, insect and plant diversity, and post-harvest soil analysis, while landscape design simulations were conducted using Revit. Results showed that Soil organic carbon increased from 1.596% to 1.786%, nitrogen from 0.166% to 0.190%, and organic matter from 2.752% to 3.07%, with bacterial populations increasing from 1.12 × 104 to 1.18 × 104 CFU/g of organic matter, indicating improved microbial ecosystem function and soil structure. In terms of carbon sequestration, *Amaranthus viridis* recorded 36.86% organic carbon, surpassing *Amaranthus cruentus at 31.6%, indicating a* higher ecological contribution. Insect diversity also increased significantly. ANOVA results indicated significant differences in insect diversity at $p < 0.05$ in week 3 and $p < 0.001$ in weeks 5 and 6**.** In conclusion, integrating amaranth into urban agricultural and landscape systems promotes environmental sustainability and biodiversity conservation while contributing to improved nutrition and sustainable food security in urban communities.

**Keywords:** *Amaranthus spp.*, biodiversity, soil health, carbon sequestration, landscape management

# Land use and land cover changes in the Colentina sub-basin during 2000-2018 using land Copernicus data

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**Abstract**

This study analyses land-use and land-cover dynamics in the Colentina Sub-Basin between 2000 and 2018 using high-resolution Copernicus Land Monitoring Service data. The results highlight consistent increases in artificial surfaces, particularly continuous and discontinuous urban fabric, indicating accelerated urban expansion within the watershed. In parallel, agricultural areas experienced a significant decline, suggesting ongoing land conversion driven by suburbanisation and infrastructure development. The semi-natural areas remained relatively stable, while wetlands and inland water bodies showed minor fluctuations. These spatial transformations are relevant, as changes in land cover influence ecosystem services, microclimate regulation, surface runoff, and exposure to environmental risks. Understanding these patterns supports integrated planning and provides evidence-based insights for managing green infrastructure, ecological connectivity, and the overall environmental health of the sub-basin.

**Keywords**: land use, land cover, landscape change, landscape dynamics, Colentina.

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# HEALTHY FOOD AND NUTRITION

# Hidden cardiac risks in everyday dietary habits – monitoring possibilities through wearable devices

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**Abstract**

Everyday dietary habits — such as frequent coffee consumption, high-sugar snacks, salty foods, or energy drinks — are often perceived as harmless indulgences. However, many of these items act as physiological stimulants, activating the sympathetic nervous system and triggering measurable cardiovascular responses: increased heart rate, reduced heart rate variability (HRV), altered vascular tone, and a heightened susceptibility to palpitations. When combined with psychological stress or insufficient sleep, these effects can intensify, occasionally leading to benign arrhythmias that may remain unnoticed without continuous monitoring.

The increasing accessibility of wearable devices equipped with pulse oximetry sensors (PPG) now allows individuals to visualize these subtle cardiovascular changes in real time. Insights from both scientific research and personal wellness data recordings make these patterns visible. The documented caffeine-induced sympathetic activation and benign arrhythmia clearly demonstrate how small everyday dietary choices can shape cardiovascular responses.

Understanding these physiological patterns helps individuals become more aware of their personal sensitivities, better recognize hidden cardiac stress, and make informed adjustments to their everyday dietary habits.

Keywords: heart rate variability (HRV), arrhythmias, pulse oximetry sensors (PPG)

# Determinants of food waste among consumers: evidence from a cross-sectional study

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**Abstract**

This study investigates consumer behavior regarding food waste, based on a questionnaire administered to a sample of respondents from both urban and rural areas. The survey examined meal and shopping planning habits (e.g., use of shopping lists, purchase frequency, food selection criteria), management of existing household food, and practices for preserving and reusing leftovers. It also assessed the frequency of discarding perishable foods (fruits, vegetables, dairy products), consumer behavior during high-purchase periods such as holidays, awareness of the environmental impact of food waste, and willingness to adopt preventive measures. Preliminary findings indicate a high level of expressed concern about reducing food waste; however, preventive behaviors—such as strict meal planning, reusing leftovers, or consuming near-expiration products—are employed with varying frequency. The results provide empirical insights into the gap between consumer attitudes and behaviors regarding food waste, highlighting the need for enhanced educational initiatives and accessible information sources to promote sustainable consumption practices.

***Keywords:*** household food management; food preservation; sustainable consumption; environmental awareness; food purchasing habits

# Perceptual and experiential determinants of food purchase decisions: insights into shelf selection behavior

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**Abstract**

In an increasingly diverse and competitive food market, understanding the factors that influence consumers' purchasing decisions is essential for effective marketing and merchandising strategies. This study investigates the primary determinants of food purchase behavior using a questionnaire administered to a socio-demographically diverse sample. It examines how variables such as shopping frequency, purchase location, external influences (e.g., mass media, relatives, promotions), and attitudes toward price and quality shape consumer behavior. The research focuses on the situational and perceptual factors that guide the selection of a specific product from a wide range of options. Findings highlight the importance of product placement at eye level, price, promotional offers, packaging design, price–quality ratio, and prior experience with the product, as well as consumers' tendency to evaluate the entire available range before making a choice. By analyzing these factors, the study provides insights into how perceptual, cognitive, and experiential elements interact during the purchasing process. The results underscore that food purchase decisions are complex, influenced not only by economic considerations but also by visual and cognitive cues, which retailers can strategically leverage to enhance product attractiveness and optimize in-store presentation.

**Keywords:** consumer behavior, food choice; perceptual factors; experiential factors; retail marketing

# Microplastic contamination in milk and dairy products - present and future

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**Abstract**

A newly emerging environmental and health concern is the contamination of milk and milk products with microplastics (MPs) and nanoplastics (NPs). Numerous studies worldwide have demonstrated the presence of MPs and NPs in widely used dairy products, including milk, cheese, yoghurt, ayran, and baby formula. Numerous sources of contamination have been accounted for along the dairy chain, ranging from airborne deposition of MPs and NPs on feed, wastewater irrigation, surface water runoffs contaminating soil, and, most importantly, plastic components such as tubes, filters, bottle caps, and packaging used in the milking, processing, and packaging processes. Our work aimed to highlight both the biological risks and the regulatory gaps surrounding microplastic contamination in milk and dairy products. Our review covers the period 2010-2025 and was conducted using scientific platforms and databases, including Scopus, Web of Science, NCBI, Google Scholar, and ResearchGate. It was found that the most commonly proposed measures for reducing MP and NP in milk and dairy products include implementing mitigation strategies such as replacing plastic filtration membranes, improving equipment hygiene, transitioning to glass packaging, and enforcing strict regulations that limit MP and NP concentrations in food.

**Keywords**: microplastics, nanoplastics, raw milk, dairy products, health risk, toxicity, food contamination, polymer, mitigation strategies

# BIoTa EcoToken: Sustainable Dairy 4.0 through Integrated Blockchain and Artificial Intelligence

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**Abstract**

In high-volume dairy production, ensuring animal health and welfare across diverse environments is a logistical challenge that exceeds human capacity. Addressing the dual challenge of animal welfare and environmental sustainability requires next-generation monitoring. This paper introduces the BIoTa EcoToken system, a multi-layered architecture integrating Internet of Things, deep learning, and a hybrid blockchain to revolutionize dairy 4.0 practices. The system leverages distributed sensors and visual data to provide continuous, objective monitoring of cattle behavior, physiology, and barn microclimate. Central to its success is the Proof of Sustainability consensus mechanism, which tokenizes rewards and incentivizes proactive farmer behavior based on verified eco-actions. Experimental results demonstrate a 40% reduction in anomaly-detection response time and a 30% increase in farmer engagement attributable to the EcoToken structure. With a validated security performance of <1% false-positive rate, BIoTa EcoToken establishes a secure and scalable framework that translates real-time farm data into verifiable, sustainable outcomes.

**Keywords**: blockchain, Internet of Things, artificial intelligence, dairy farming, animal welfare, sustainable livestock, proof of sustainability, anomaly detection

# Characterization of beekeeping value chains in Africa: a systematic review with insights from the Republic of Benin

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**Abstract**

Honey production and its value chain are increasingly recognized for their economic, environmental, and livelihood contributions in Africa. We systematically reviewed 16 studies published over the past decade (2014 to 2024), focusing on the technological levels, stakeholder roles, organizational structures, coordination mechanisms, and challenges to honey value chains across African countries. The results indicate an increasing research interest in the topic since 2021, with most activity concentrated in Ethiopia. This reflects the country's strong beekeeping tradition and leadership in honey production. Traditional beehive systems are the most common, representing 54.2% of all reported systems, but with low output (9.42 kg/hive/year on average). Transitional and modern hives are less commonly used but have substantially higher output (20.51–21.67 kg/hive/year on average), underscoring their potential to increase output and income. The reported honey value chain comprises a diverse set of direct stakeholders—including input suppliers, producers, traders, processors, and consumers—and indirect stakeholders such as government agencies, NGOs, and financial institutions that support technology adoption and market access. Our systematic review identifies two main organizational structures, including cooperatives and market unions, which showed strong coordination mechanisms for countries like Ethiopia and Zambia. In contrast, Benin's chain shows lower market coordination, is domestically focused, features significant female participation in processing, and depends heavily on NGOs' assistance, with limited value addition. Key determinants of honey yield include hive type, number of hives, technology adoption, and biological factors such as pests and colony health. Promoting modern beekeeping systems, strengthening value chain coordination, and fostering inclusive policies could increase productivity and livelihoods.

**Keywords:** honey value chain, technology, performance, organization, coordination, constraints

# Parenting and anti-vaccinism on social media

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**Abstract**

This paper examines the role of niche media projects in shaping public opinion on child vaccination, with a specific focus on parenting-oriented digital platforms. It investigates how blogs and websites addressing parenting inform audiences about pro- and anti-vaccination narratives and whether they stimulate constructive public debate. The study assumes that, despite their specialized content, these platforms do not fully satisfy parents' need for clarification on this sensitive topic, prompting them further to seek information and validation within social media groups. From an interdisciplinary perspective, integrating media, communication, and cultural studies, the paper explores consumer behavior regarding the use of niche media sources related to children's vaccination. Furthermore, it analyzes how credibility and popularity are constructed within parenting blogs and the significance of these factors for both audiences and the wider media landscape.

**Key words:** anti-vaccinism, blogging, communication, new media, parenting.

# Research on marketing strategy innovation of Chinese enterprises in the context of digital and green transformation

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**Abstract**

With the rapid development of digital technology and the deepening of the concept of sustainable development, the dual transformation of digitalization and greening has become crucial for Chinese enterprises to gain a competitive advantage. This paper employs a literature review and theoretical discussion to analyze problems in the marketing processes of Chinese enterprises. It proposes innovative marketing strategies in the context of dual transformation. Chinese enterprises face challenges, including an imperfect green certification system, an incomplete digital marketing system, and insufficient innovation in new media marketing. The study finds that these problems can be effectively addressed by developing a unified, coordinated green certification standard system, building a digital and intelligent marketing system, and actively exploring innovative digital marketing models. The research results provide practical guidance for the digital and green marketing transformation of Chinese enterprises and offer new perspectives on the theoretical research of digital and green marketing, with significant theoretical and practical significance.

**Keywords:** digital transformation; green transformation; marketing strategy innovation; ESG; sustainable marketing

# Upcycling overripe *Asimina triloba* (pawpaw) pulp in plant-based meat alternatives

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**Abstract**

*Asimina triloba* fruit, known as pawpaw in the USA, is an underutilized tree fruit that is distinguished by its notable phytochemical profile and tropical sensory profile. Its short post-harvest shelf life often results in discarded fruit, causing significant economic losses; therefore, transforming a potential waste product into a food component (e.g., upcycling) could help mitigate food waste. The global shift toward sustainable and ethical food consumption has propelled the plant-based meat alternative (PBMA) market into rapid growth. This study addresses both concerns by investigating the upcycling of overripe pawpaws as a novel functional ingredient for PBMA development, an application within structured food matrices that remains unexplored. We hypothesized that incorporating pawpaw pulp could simultaneously enhance the nutritional value, sensory properties, and technical functionality of PBMAs, while providing a sustainable use for a waste-stream product. Two PBMA products—burger patties and nuggets—were developed using a structured factorial design. The findings report how pawpaw pulp incorporation affected the binding properties, structural integrity, and sensory properties of the PBMA's and will be used to discuss the upcycling potential of overripe pawpaw pulp as a functional ingredient in the development of nutrient-rich and sustainable PBMA's.

**Keywords:** pawpaw, *Asimina triloba,* plant-based meat alternatives, upcycling.

# The challenge of comparing tart cherry polyphenols from the USA and Europe

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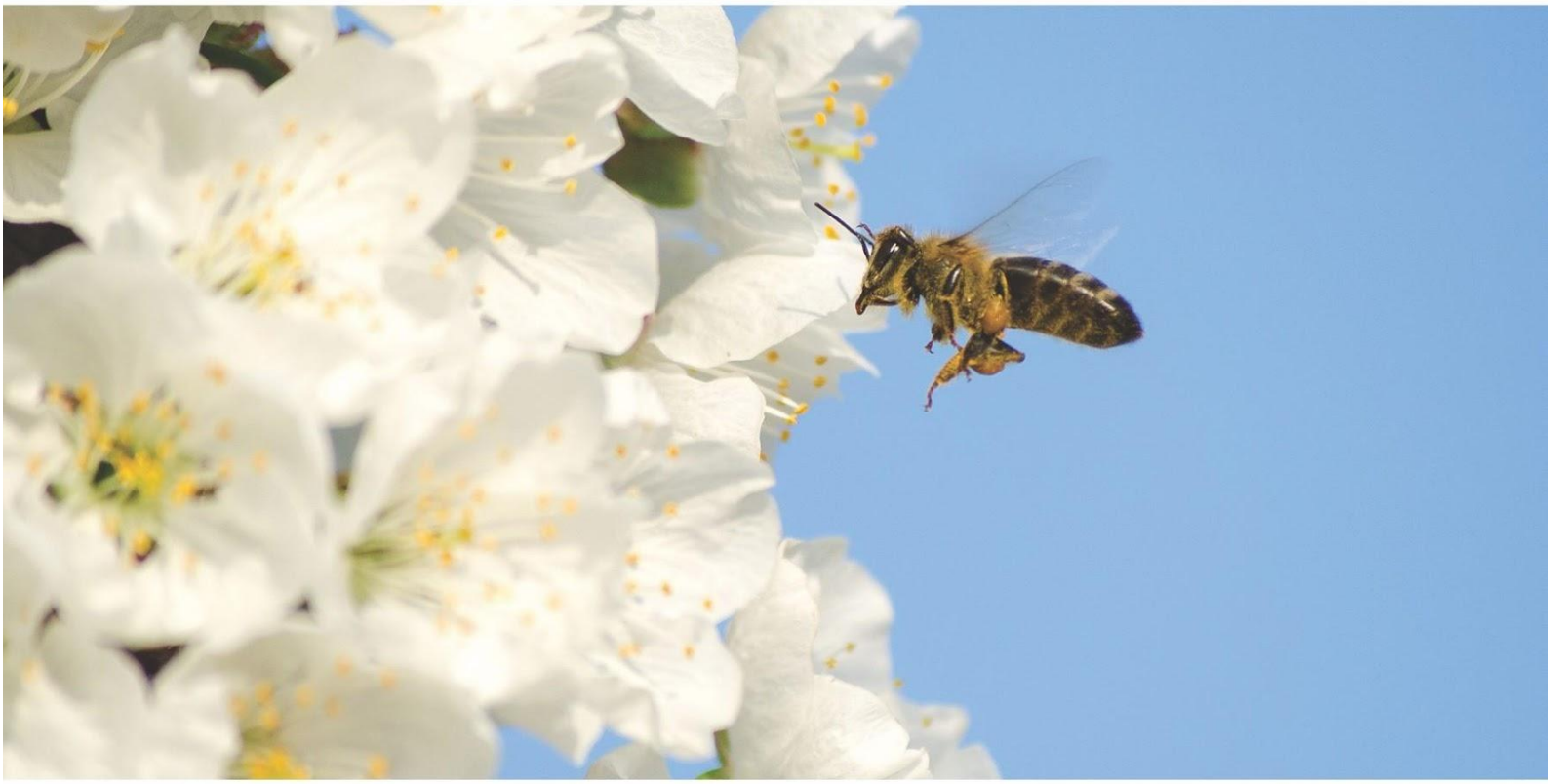
**Abstract**

Tart cherries (*Prunus cerasus* L.) are globally recognized as a substantial source of polyphenolic compounds with associated bioactive effects. However, direct comparison of the published data is challenging due to differences in cultivar (e.g., US Montmorency vs. European Oblačinska, Łutówka, Újfehértói Fürtös, etc.), environmental conditions, processing methods, storage conditions, and analytical methods. Our recent study investigated five forms of the cultivar 'Montmorency' using a TSQ triple quadrupole LC-MS/MS with authentic external standards, and the results were reported as ppm dry weight (DW) for precise cross-comparison. The use of a single cultivar and advanced triple quadrupole LC-MS/MS techniques enabled sensitive detection and precise quantification of both major and minor polyphenols. European studies typically report polyphenolic data on a fresh weight (FW) basis and use less selective HPLC-UV/DAD, UHPLC-PDA, and spectroscopic assays. European data are highly variable and intended only for contextual comparison, as they reflect results from multiple cultivars and studies. For example, our work indicated that the 'Montmorency' variety contained a balanced profile of cyanidin-3-rutinoside and cyanidin-3-glucoside, whereas European cultivars, such as 'Oblačinska', are typically characterized by a predominance of cyanidin-3-glucosylrutinoside. Trends related to stability during processing will also be presented. These findings underscore the need for standardized analytical methods and reporting units to enhance cross-regional comparisons and support future nutritional and clinical research.

**Keywords:** tart cherry, sour cherry, *Prunus cerasus,* polyphenols, anthocyanins.



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