TITAN

Transparency solutions for transforming the food system

Summary of interesting publications on topics relevant to the TITAN project

ENABLING INFORMED CHOICES BY CONSUMERS

Publications

REPORT

FAO; WHO

Risk assessment of food allergens – Part 3: Review and establish precautionary labelling in foods of the priority allergens

FAO and WHO reconvened a third meeting to review and evaluate the evidence in support of precautionary allergen labelling to address unintended allergen presence in foods.

FAO; WHO

PAPER

WHO;

Volume, 170, Page, 113023

Interpreting the variation in particle size of ground spice by high-resolution visual and spectral imaging: A ginger case study

This study aimed to interpret the impact of particle size of ground spice on its HR visual profile and spectral imaging profile using ginger powder as a representative spice powder model.

Han, Q., Peller, J., Erasmus, S. W., Elliott, C. T., & Van Ruth, S. M

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ARTICLE
LinkedIn

Combating food fraud: The power of MedISys-FF as an early warning system

In this article, we delve into the importance of early detection and analysis of food fraud incidents using MedISys-FF, providing insights into global trends and developments in this domain.

Bouzembrak, Y.

PAPER
PNAS

Page, 101073

Toward healthy and sustainable diets for the 21st century: Importance of sociocultural and economic considerations

Advancing the food system transformation to healthy, sustainable diets transcends the personal control of engaging consumers. The challenge for science is to scale-up, to become more interdisciplinary, and to engage with policymakers and food system actors.

Biesbroek, S., Kok, F. J., Tufford, A. R., Bloem, M. W., Darmon, N., Drewnowski, A., Fan, S., Fanzo, J., Gordon, L. J., Hu, F. B., Lähteenmäki, L., Nnam, N., Ridoutt, B. G., Rivera, J., Swinburn, B., & Veer, P. V.

PAPER
Lancet

How the EAT–Lancet Commission on food in the Anthropocene influenced discourse and research on food systems: a systematic review covering the first 2 years post-publication

The aims of this Health Policy were to identify and examine the debates that arose from the publication of the EAT–Lancet Commission, systematically examine how research has been directly influenced by the Commission, and synthesise identified research gaps to build a research agenda for healthy and sustainable food systems.

Tulloch, A. I. T., Borthwick, F., Bogueva, D., Eltholth, M., Grech, A., Edgar, D., Boylan, S., & McNeill, G.

ARTICLE
Science direct

Volume, 175

Page, 107945

New insights into the combined toxicity of aflatoxin B1 and fumonisin B1 in HepG2 cells using Seahorse respirometry analysis and RNA transcriptome sequencing

In the current work, we further investigated the (combined) effect of AFB1 and FB1 on the mitochondrial and glycolytic activity of HepG2 cells using Seahorse respirometry analysis and RNA transcriptome sequencing.

Chen, X., Abdallah, M. F., Grootaert, C., Van Nieuwerburgh, F., & Rajkovic, A.

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ARTICLE

Science direct

Volume, 356

Page, 109351

Processing environment monitoring in low moisture food production facilities: Are we looking for the right microorganisms?

In the current work, we further investigated the (combined) effect of AFB1 and FB1 on the mitochondrial and glycolytic activity of HepG2 cells using Seahorse respirometry analysis and RNA transcriptome sequencing.

Bourdichon, F., Betts, R. P., Dufour, C., Fanning, S., Farber, J. M., McClure, P. R., Stavropoulou, D. A., Wemmenhove, E., Zwietering, M. H., & Winkler, A.

ARTICLE

Science direct

Volume, 300

Page, 122932

Evaluation of the adulteration of camel milk by non-camel milk using multispectral image, fluorescence and infrared spectroscopy

In the present study, the focus was to evaluate the potential of three spectroscopic techniques (Mid Infrared -MIR-, fluorescence, and multispectral imaging -MSI-) to check the level of adulteration in camel milk with goat, cow, and ewe milks.

Boukria, O., Boudalia, S., Bhat, Z. F., Hassoun, A., & Aït-Kaddour, A.

REPORT

European Comission

2022 Annual Report Alert and Cooperation Network

In the present study, the focus was to evaluate the potential of three This annual report covers all the information shared in 2022 within iRASFF, between members of the Alert and Cooperation Network (ACN) that includes the Rapid Alert System for Food and Feed network (RASFF), the Administrative Assistance and Cooperation network (AAC) or the Agri-Food Fraud Network (FFN).

ARTICLE

Science direct

Volume, 109

Page, 104916

Classification trees as machine learning tool to explore consumers' purchasing decision pathway. A case-study on parent's perception of baby food jars

The objective of this study was to use classification tree method to model purchasing parents' decision of buying or rejecting baby food jars and to identify the different pathways in the decision of consumers that explain the different purchasing patterns.

Carrillo, E., González, M., Parrilla, R., & Tárrega, A.

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Reports

PUBLICATION

Academy Nutrition Sciences

Understanding ultra-processed foods and human health: a journey without a plan?

The Academy of Nutrition Sciences welcomes a position paper on UPFs recently published from the British Nutrition Foundation (BNF) which focused on the debate that had been stimulated by the discussion around UPF consumption and diet-related disease.

BOOK

ILSI Europe

Present Knowledge in Food Safety

Present Knowledge in Food Safety: A Risk-Based Approach Through the Food Chain presents approaches for exposure-led risk assessment and the management of changes in the chemical, pathogenic microbiological and physical (radioactivity) contamination of 'food' at all key stages of production, from farm to consumption.

Knowles, M. E., Anelich, L., Boobis, A., & Popping, B. (Eds.).

REPORT

NYU STERN

Effective sustainability communications: A best practice guide for brands & marketers

Brands have become adept in creating demand for new attributes, however, marketers have yet to consistently engage consumers in sustainability. This NYU Stern Center for Sustainable Business and Edelman partnership will provide best practice insights to assist companies in accelerating consumer demand to drive a pivot toward a more sustainable world.

REPORT

Epha

The illusion of choice: Why someone already decided what you will eat for lunch

There is growing evidence that consumers' food choices are shaped by the 'food environments' they navigate in. Most individuals, however, do not realise the extent to which their eating habits are steered by a multiplicity of factors, from the ads they keep seeing on billboards in the street to the range of food products that is available at the supermarket, through the promotional offers and discounts offered by retailers.

ARTICLE

Food Ingredients First

Alternative Proteins Association calls for "common sense" food labelling in plant-bases dispute

Common sense rules on food labeling would make life easier for shoppers, boost UK businesses and help the country hit its net zero goals, a report published by the Alternative Proteins Association (APA) has revealed.

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REPORT

Alternative Proteins Association

Recommendations on the Labelling of Alternative Proteins

This paper turns the spotlight on the business and environmental costs of restrictive labels. Governments cannot meet their net zero commitments without addressing the huge emissions associated with the animal industry, yet the kind of labelling restrictions that are either already in place or actively being considered create a hurdle for small and medium-sized businesses, while skewing the playing field in favour of the status quo.

SUPPLY CHAIN SUSTAINABILITY

Publications

ARTICLE

Peakbridge

Unwrapping the future: Innovative food packaging solutions for a sustainable tomorrow

After being exposed to multiple sustainable food packaging startups, we decided to review the space to better understand the current industry and its challenges, the technological approaches, and the startup landscape.

Zammit, O., Savion, O., Martinovic, A., & Pauly, G. (2023).

ARTICLE

GreenBiz

Teetering on the traceability tipping point

Food and agriculture companies are experiencing an uptick in interest in how they engage their supply chains to future-proof their business and protect nature. This is forcing companies to address their negative impacts and transform into regenerative and just.

Olson, S. (2023).

JOURNAL

Foods

Food security and sustainability

This section encompasses all aspects of food security and sustainability. When addressing global food security issues, one should consider the challenges of globally achieving food security and the obstacles/constraints—physical, biological, economic, and socio-political—that limit food production and obstruct access to healthy diets.

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Transparency solutions for transforming the food system

ARTICLE

The Economist

Demand for chocolate causes more illegal deforestation than people realise

The cocoa supply chain, much like a high-end bar of chocolate, is complex, opaque and a little nutty. Farmers, mainly in West Africa, sell their crop to local intermediaries, who in turn sell to exporters. These exporters sell to chocolate manufacturers and traders, often in Europe, who themselves are backed by investors in London and New York.

JOURNAL

ScienceDirect

Volume, 118

Page, 102440

Trade effects of voluntary sustainability standards in tropical commodity sectors

This article investigates the trade implications of voluntary sustainability standards (VSS) in tropical commodity sectors. VSS are increasingly important, not only in corporate sustainability strategies, but also in trade policy, thereby shifting the responsibility for the governance of sustainability in the food system from the public to the private sector.

Bemelmans, J., Curzi, D., Olper, A., & Maertens, M. (2023).

JOURNAL

Current Biology

Volume, 33

Issue, 11

Mycorrhizal mycelium as a global carbon pool

For more than 400 million years, mycorrhizal fungi and plants have formed partnerships that are crucial to the emergence and functioning of global ecosystems. The importance of these symbiotic fungi for plant nutrition is well established. Here, the authors analyze nearly 200 datasets to provide the first global quantitative estimates of carbon allocation from plants to the mycelium of mycorrhizal fungi.

Hawkins, H.-J., Cargill, R. I. M., Van Nuland, M. E., Sheldrake, M., Hagen, S. C., Field, K. J., Soudzilovskaia, N. A., & Kiers, E. T. (2023).

Reports

REPORT

Food Matters Live

Issue, 1

Sustainable Food Digest: Explore the big issues facing the food and drink industry

In this first issue of the Sustainability Digest from Food Matters Live, authors explore the future for sustainability in the ingredients sector, and the wider world of food and drink.

BOOK

De Gruyter

Handbook of the Circular Economy

This book takes a unique look at this rapidly expanding field of activity from the perspectives of global thought leaders, world-leading researchers and industry. Exploring both transitional activity and considering a transformed Circular Economy the book is presented in three distinct sections.

Funded by the European Union

Alexander, A., Pascucci, S. & Charnley, F. (2023).

REPORT
OECD
Issue, 1

OECD-FAO Agricultural Outlook 2023-2032

The Agricultural Outlook 2023-2032 is a collaborative effort of the Organisation for Economic Co-operation and Development (OECD) and the Food and Agriculture Organization of the United Nations (FAO). It brings together the commodity, policy and country expertise of both organisations as well as input from collaborating member countries to provide an annual assessment of the prospects for the coming decade of national, regional and global agricultural commodity markets.

FAO & OECD. (2023).

DEVELOPMENT & IMPLEMENTATION OF NEW TECHNOLOGIES

Publications

JOURNAL
Food Control
Volume, 152
Page, 109835

Evaluation of spectral handheld devices for freshness assessment of carp and trout fillets in relation to standard methods including non-targeted metabolomics

The potential of three different portable near infrared (NIR) spectrometers (TellSpec, SCiO, MicroNIR) to monitor freshness of organic carp and lake trout fillets was assessed. The intercomparison was supported by data obtained with standard methods (for biogenic amine content, microbiological parameters, total volatile basic nitrogen content, fatty acid profiles, drip loss, color and texture change) including non-targeted metabolomics by dynamic headspace - gas chromatography - time-of-flight mass spectrometry (DHS-GC-TOFMS).

Moser, B., Jandric, Z., Troyer, C., Priemetzhofer, L., Domig, K. J., Jäger, H., Van Den Oever, S. P., Mayer, H. K., Hann, S., & Zitek, A. (2023).

JOURNAL

Evaluation of Covalent Organic Frameworks for the low-cost, rapid detection of Shiga Toxin-producing Escherichia coli in ready-to-eat salads

Funded by the European Union

Analytica Chimica Acta
Volume, 1267
Page, 341357

In the current study, a low-cost sample treatment based on sequential filtration steps was developed. This protocol was combined with covalent organic frameworks (COFs), and compared against a chelating resin, to evaluate their performance by multiplex qPCR targeting the major virulence genes of STEC, namely *stx*1, *stx*2, and *eae*, along with the *rfbE* for the specific identification of serogroup O157 due to its particularly high incidence, and an Internal Amplification Control to assess reaction inhibition.
Costa-Ribeiro, A., Azinheiro, S., Fernandes, S. P., Lamas, A., Prado, M., Salonen, L. M., & Cabado, A. G. (2023).

JOURNAL
Nature Communication
Volume, 171
Page, 113085

A Geographical Origin assessment of Italian Hazelnuts: Gas Chromatography-Ion mobility spectrometry coupled with Multivariate Statistical Analysis and Data Fusion approach

Hazelnut is a commodity that has gained interest in the food science community concerning its authenticity. The quality of the Italian hazelnuts is guaranteed by Protected Designation of Origin and Protected Geographical Indication certificates. However, due to their modest availability and the high price, fraudulent producers/suppliers blend, or even substitute, Italian hazelnuts with others from different countries, having a lower price, and often a lower quality. To contrast or prevent these illegal activities, the present work investigated the application of the Gas Chromatography-Ion mobility spectrometry (GC-IMS) technique on the hazelnut chain (fresh, roasted, and paste of hazelnuts).
Sammarco, G., Bardin, D., Quaini, F., Dall'Asta, C., Christmann, J., Weller, P., & Suman, M. (2023).

ARTICLE
ACM
Volume, 4
Issue, 2

Towards a Common Definition of Open Data Intermediaries

The role of open data intermediaries is considered instrumental in the supply and use of open data. There are various definitions of open data intermediaries in the literature and some of them are quite different from each other. These definitions can benefit from harmonization so knowledge about open data intermediaries can be developed on top of a shared understanding of what open data intermediaries mean. The objective of this article is to propose a common definition of open data intermediaries.
Shaharudin, A., Van Loenen, B., & Janssen, M. (2023).

Reports

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REPORT

UNCTAD

Global Report on Blockchain and its implications on Trade Facilitation Performance

This report aims to support policymakers, especially trade policymakers, to understand the basic features of the blockchain technology as well as the policy considerations and design options available in the blockchain industry that could be harnessed towards enhancing trade facilitation efforts and improving legacy trade systems and trade processes.

UNCTAD (2023).

TAKING THE FOOD SYSTEM APPROACH

Publications

JOURNAL

Technovation

Volume, 126

Page, 102786

The limits of open innovation: Failures, risks, and costs in open innovation practice and theory

In this editorial, the authors further introduce this perspective, describe the articles published in this special issue, and offer some suggestions for future research. Overall, they believe that a better understanding of the limits of openness will allow for a more balanced view, thereby further expanding the frontiers of open innovation practice and theory.

Dabić, M., Daim, T., Bogers, M. L., & Mention, A. (2023).

JOURNAL

Food Policy

Volume, 118

Page, 102440

Trade effects of voluntary sustainability standards in tropical commodity sectors

This article investigates the trade implications of voluntary sustainability standards (VSS) in tropical commodity sectors. VSS are increasingly important, not only in corporate sustainability strategies, but also in trade policy, thereby shifting the responsibility for the governance of sustainability in the food system from the public to the private sector.

Bemelmans, J., Curzi, D., Olper, A., & Maertens, M. (2023).

ARTICLE

EAT-Lancet Commission 2.0: securing a just transition to healthy, environmentally sustainable diets for all

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The Lancet

Global volatile supplies and costs of food, fuel, and fertilisers contribute to inflation and social instability. The effects of the COVID-19 pandemic disrupted economies and societies across the globe, and the risk of new emerging infectious diseases persists. Injustices and inequities embedded within the food system have increased, confirming the urgency of a "Great Food Transformation", as called for by the EAT–*Lancet* Commission in 2019, which today remains unrealised. Profound food systems challenges still need to be addressed.

Reports

REPORT

EIT Climate-KIC

Dealing with Climate Change and Sustainability Targets: The innovation potential for the Irish Agri-Food Sector

This report, 'Dealing with climate change and sustainability targets', provides an overview of solutions that can be considered as a part of the portfolio development, during which new innovation actions — including both policies and projects — are co-designed with public, private and civil society stakeholder actors.

ARTICLE

CSIRO

Reshaping Australian food systems

Taking a holistic approach, this Roadmap articulates options that could inform a transition to a more sustainable, productive, and resilient future for Australia's food, environment and people.

ARTICLE

IEEP

European Green Deal Barometer 2023

The third edition of the European Green Deal Barometer, IEEP's annual survey which gathers sustainability experts' views on the progress of the European Green Deal's implementation, has released its key findings. This comprehensive survey of 600+ experts reveals that 61% of respondents are cautiously optimistic about the European Green Deal's resilience following the 2024 European elections; however, its implementation may be tested by shifting political winds in the run-up to next year's European elections and beyond.

REPORT

EIT Food

The menu for change: 2022 evaluation

This report links with the Menu for Change and is intended to highlight the progress made in 2022 as well as to act as a reminder that there is still much work to be done.

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FutureFoodMakers. (2022).

REPORT

FAO

Rethinking our food systems: A guide for multi-stakeholder collaboration

The Global Sustainable Development Report identified food systems transformation as one of the key accelerators to achieve the Sustainable Development Goals (SDGs). The United Nations Food Systems Summit Dialogues highlighted the need for more constructive relationships among policymakers, the business community, civil society, and academia and research institutions to resolve the challenges confronting food systems – from food insecurity, malnutrition and rural poverty to biodiversity loss and climate change. The COVID-19 pandemic, the conflict in Ukraine and food inflationary pressures have also been reminders of the need to adopt a multi-stakeholder approach for building a resilient food system that can cope with disruptions

FAO, UNEP, & UNDP. (2023).

REPORT

United Nations

Financing for Sustainable Development Report 2023

With many systemic reform processes ongoing, the international community needs to deliver on the outstanding promise of the Addis Ababa Action Agenda to create a coherent, mutually supporting world trade, monetary and financial system, while updating commitments to reflect the changing world. This report identifies numerous steps that policymakers can take towards building a sustainable and just world.

REPORT

Eurocities

How the EU can work better with cities.

The current top priorities of city leaders include climate action, clean energy transition, economic recovery, urban mobility, migration, housing and tackling inequalities. Most of these priorities mirror the challenges the EU is trying to solve in the pursuits of a green, just, and digital transition. Due to a global pattern of urbanisation the major challenges are effectively increasingly becoming urbanised. Efforts to tackle the challenges therefore need a focus on and the direct involvement of cities.

ARTICLE

IUCN

Nature-based solutions for water

Natural water infrastructure' is not built infrastructure. Instead, it is shaped, grown, eroded or deposited by nature over time. Working with natural infrastructure can amplify and optimise the performance as well as the financial

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returns of engineered water infrastructure such as dams, levees and reservoirs. Yet natural water infrastructure is not always accounted for, and as a result, is often sidelined in grey infrastructure projects. This can have negative social and environmental impacts. It can also reduce the natural adaptability of river basins to cope with climatechange, and therefore weaken its resilience.

REPORT

Eatable Adventures

Open innovation nel settore agroalimentare 2022 (Italian)

The analysis of Open Innovation in the agri-food sector was conducted by Eatable Adventures, in order to present a comprehensive overview of the global trends and challenges in the agri-food sector, as well as to identify the best strategies to improve competitiveness. This is the first quantitative study examining innovation in the agri-food sector based on responses from 43 medium-sized and large companies worldwide

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