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

ARTICLE

New Food

Processing environment monitoring

François Bourdichon discusses the ins and outs of processing environment monitoring with a focus on detecting microbial pathogens' harbourage sites.

New Food Magazine

PAPER

Food control

Volume, 154,

Page, 109950

Digitalization and official food safety inspections at retail establishments

This research explores the use of a digital environment during official food safety inspections in the European Union. More than half of the competent authorities use a digital environment to standardize the data recording process.

Grau-Noguer, E., Suppi, R., Rodríguez-Sanz, M., Serratosa, J., Bolao, A., Lundén, J., Hau, P., De Vasconcelos, F. M., Åberg, R., Blomgren, C., Lambert, M., Leppik, K., Vågsholm, I., Kautto, A. H., Lueckl, J., Abeln-Richter, S., Kamphausen, R., Bammens, E., Georgiades, F., . . . Portaña, S. (2023)

ARTICLE

Journal of Food Science and Technology

A review and comparative perspective on health benefits of probiotic and fermented foods

This review describes fermented and functional foods, probiotics and their relationship to human health.

Ibrahim, S. A., Yeboah, P. O., Ayivi, R. D., Eddin, A. S., Wijemanna, N. D., Paidari, S., & Bakhshayesh, R. V. (2023).

ARTICLE

Quality Assurance Magazine

Food Crime: How to Protect Your Company, Consumers and More

Food fraud, intentional adulteration to cause harm and theft can have huge implications on food safety and quality. Protect your company and consumers with knowledge and preparation.

Quality Assurance & Food Safety

PAPER

Science direct

Volume, 138

Page, 766-773

The GFSI food fraud prevention compliance development & requirements: A ten-year review

This research presents the key GFSI food fraud prevention strategy development milestones from the historical records and a member of the original GFSI Food Fraud Think Tank.

Spink, J. (2023).

ARTICLE

Analytic Science Journal

QuEChERS method combined to liquid chromatography high-resolution mass spectrometry for the accurate and sensitive simultaneous determination of pyrrolizidine and tropane alkaloids in cereals and spices

The objective of this paper is to assess the contemporary developments of Food Safety Management System standards (FSMS) worldwide and to identify the primary constraints and advantages associated with their implementation by small and medium-sized enterprises across different regions.

Rollo, E., Catellani, D., Dall'Asta, C., & Suman, M. (2023).

PAPER

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. (2023).

Funded by the European Union

PAPER

Nutrients

Volume, 15

Page, 3837

Consumer Interaction with Sustainability Labelling on Food Products: A Narrative Literature Review

This paper investigates the impact of sustainability labelling on consumer understanding, attitudes, and behaviour to support a more nuanced, detailed, and holistic understanding of the evidence.

Cook, B., Leite, J. C., Rayner, M., Stoffel, S., Van Rijn, E., & Jan, W. (2023).

PAPER

Methods and Protocols in Food Science

Mathematical Simulation of the Bio-Protective Effect of Lactic Acid Bacteria on Foodborne Pathogens

Microbial interaction models are intended to quantify how much the growth of one population is affected by other microbial population(s). In the food context, these models are usually based on two approaches consisting of, on the one hand, the Jameson effect, which represents competition for nutrients between populations (e.g., lactic acid bacteria), and, on the other hand, the Lotka-Volterra (predator-prey) model, in which competition is represented by two inhibition coefficients.

Costa, J. C. C. P., Bolívar, A., & Pérez-Rodríguez, F. (2023).

PAPER

ScienceDirect

Volume, 124

Page, 105607

Patterns in official food control data – Modelling dioxin and PCB profiling data for authentication of Baltic Sea salmon

Fish and fish products are often subjected to food fraud. Due to the significant environmental pollution of the Baltic Sea, fish caught in this area might be labelled as originating from elsewhere. Therefore, analytical proof showing whether fish samples like salmon come from the Baltic Sea or not is of particular interest.

Wilde, A. S., Sørensen, S. J., Kucheryavskiy, S., Ланге, Е. К., & Ballin, N. Z. (2023).

PAPER

ScienceDirect

Volume, 188

Page, 106638

Exploring the role of decision support systems in promoting healthier and more sustainable online food shopping: A card sorting study

This study aims to identify opportunities and barriers in developing and implementing Food Shopping Support Systems (FSSS) for healthier and more sustainable choices, given the growing consumer demand and persistent societal problems related to food.

Jansen, L., Van Loo, E. J., Bennin, K. E., & Van Kleef, E. (2023).

Funded by the European Union

PAPER

Utrecht University

Government policies to improve food environments: A population and equity lens.

Studies from this thesis, using the 'Healthy Food Environment Policy Index' (an international research tool), demonstrate that both the Dutch government and the European Union have implemented very few policy measures to create a healthy food environment.

Djojosoeparto, S. K. (2023).

ARTICLE

Food Manufacture

Looking for fraud in wheat flour

As the war between Russia and Ukraine continues to inflict supply chain difficulties upon Europe's breadbasket, Bia Analytical looks at how manufacturers can ensure their wheat/flour is genuine.

ARTICLE

Springer Link

Yearly attained adherence to Mediterranean diet and incidence of diabetes in a large randomized trial

Several large observational prospective studies have reported a protection by the traditional Mediterranean diet against type 2 diabetes, but none of them used yearly repeated measures of dietary intake. Repeated measurements of dietary intake are able to improve subject classification and to increase the quality of the assessed relationships in nutritional epidemiology.

Martínez-González, M.A., Montero, P., Ruiz-Canela, M. *et al.*

PAPER

ScienceDirect

Volume, 124

Page, 105714

Simultaneous analysis of ascorbic and dehydroascorbic acid in fruit juice using HILIC chromatography coupled with mass spectrometry

A HILIC-MS/MS method was developed for the simultaneous analysis of ascorbic acid (AA) and dehydroascorbic acid (DHA).

Zia, H., Fischbach, N., Hofsommer, M., & Slatnar, A. (2023).

ARTICLE

Botanical Adulterants Prevention

Adulteration of Pomegranate Ingredients and Products

This bulletin provides information on issues of adulteration of pomegranate (Punica granatum) juice and fruit extracts as an update to previous reports.1,2 It may serve as guidance for quality control personnel, the international phytomedicine, botanical supplement and food/flavor industries, and the extended natural products community in general. It provides a summary of the scientific data and methods regarding the occurrence of adulteration, the market situation, and economic and safety consequences for the consumer and the industry.

Cardellina II JH, Gafner S.

Funded by the European Union

ARTICLE

Toxins

Effects of Climate Change on Areas Suitable for Maize Cultivation and Aflatoxin Contamination in Europe

The aim of this study was to obtain insights into the impact of climate change on possible changes in land use in Europe, particularly in areas suitable for maize cultivation, and on the probability of the mycotoxin contamination of maize in order to give directions for long-term adaptation to climate change.

Focker, M., Van Eupen, M., Verweij, P., Liu, C., Van Haren, C., & Van Der Fels-Klerx, H. (2023).

BOOK

Wiley

e-Books

Microbial fermentations in nature and as designed processes.

Fermentation is one of the most important metabolic tools that biology has developed and microorganisms in many ways seem to have become the true masters of fermentative metabolism. Each of the fermentative microbial functions evolved to fit an energetic opportunity, and each function has ecological value.

ARTICLE

FEMS

Microbiology

Ecology

Influence of metabolic guilds on a temporal scale in an experimental fermented food derived microbial community

The influence of community diversity, which can be measured at the level of metabolic guilds, on community function is a central question in ecology. Particularly, the long-term temporal dynamic between a community's function and its diversity remains unclear. We investigated the influence of metabolic guild diversity on associated community function by propagating natural microbial communities from a traditionally fermented milk beverage diluted to various levels.

Leale, A., Auxier, B., Smid, E. J., & Schoustra, S. (n.d.).

PAPER

ScienceDirect

Volume, 398

Page, 134722

Automated lab-on-chip for the specific detection of invasive species through environmental DNA

The ability to detect nucleic acid sequences is revolutionizing the fast identification of specific organisms, particularly with Lab-on-a-chip systems. However, these often rely on complex processes, skilled personnel, and external control devices which limits automation. To address this, we present an automated, portable, and easy-to-fabricate lab-on-chip that combines enzyme-assisted DNA signal amplification and optical detection for in-situ monitoring of zebra mussel invasive species in the environment.

Elumalai, M., Ipatov, A., Guerreiro, J. R. L., & Prado, M.

Funded by the European Union

ARTICLE

Cambridge University

Bringing down barriers to children's healthy eating: a critical review of opportunities, within a complex food system

This narrative review revises the scientific evidence of recent years on healthy eating in children and adolescents, making sense of promising avenues of action, from a food system perspective.

Varela, P., De Rosso, S., Moura, A. F., Galler, M., Philippe, K., Pickard, A., Ragelienė, T., Sick, J., Van Nee, R. L., Almli, V. L., Ares, G., Grønhøj, A., Spinelli, S., & Van Kleef, E. (2023).

ARTICLE

Nature Communication

Bifidobacteria shape antimicrobial T-helper cell responses during infancy and adulthood

This study investigates anti-bacterial T-cell responses against Staphylococcus aureus aureus, Staphylococcus epidermidis and Bifidobacterium longum infantis in early stages of life and adults and shows age and pathogen-dependent mechanisms.

Vogel, K., Arra, A., Lingel, H., Bretschneider, D., Prätsch, F., Schanze, D., Zenker, M., Balk, S., Bruder, D., Geffers, R., Hachenberg, T., Arens, C., & Brunner-Weinzierl, M. C. (2023).

Reports

BOOK

Routledge

Agrobiodiversity, school gardens and healthy diets: Promoting biodiversity, food and sustainable nutrition

This book critically assesses the role of agrobiodiversity in school gardens and its contribution to diversifying diets, promoting healthy eating habits and improving nutrition among schoolchildren as well as other benefits relating to climate change adaptation, ecoliteracy and greening school spaces.

Hunter, D.; Monville-Oro, E.; Burgos, B.; Rogel, C.N.; Calub, B.; Gonsalves, J.; Lauridsen, N.O. (2020)

BOOK

FAO

Activity book – Water is life, water is food

This Activity Book is aimed at a broad age range of young people interested in learning more about the importance of water on our planet, inspiring them with solutions for a wiser management of water resources.

Funded by the European Union

REPORT

WHO

Microbiological risk assessment: guidance for food

The Microbiological Risk Assessment Guidance for Food was developed for the global community of scientists and risk assessors, both experienced and inexperienced in risk assessment, and the risk managers or others responsible for risk decision-making and/or communication so that they can: i) identify the key issues and features of a microbiological risk; ii) recognize the properties of a best-practice risk assessment; iii) avoid some common pitfalls of risk assessment; and iv) perform risk assessments that are responsive to the needs of risk managers.

REPORT

nesta

Public support for healthy food environment policies in Wales

BIT and Nesta examined how different ways of presenting healthy eating policies impact people's support for those policies. We did this through an online study with a representative sample of 3,025 Welsh adults from 15 June to 6 July 2023.

BOOK

ScienceDirect

Encyclopedia of Food Safety

Encyclopedia of Food Safety, Second Edition, Four Volume Set provides an authoritative one-stop reference work covering all aspects of the field. Specific focus lies in the book's coverage of key industry developments over the last ten years

SUPPLY CHAIN SUSTAINABILITY

Publications

ARTICLE

Financial Times

Researchers' recipe for cutting restaurant food waste

Food waste is a mirror that reflects back at us the failures of our societies and industries. Every year, billions of tons of food are wasted, while food insecurity remains a global problem. Beyond surplus and absence, it contributes to worsening emissions. But recent research offers insights that could help tackle the problem.

Martin-Rios, C. (2023).

Funded by the European Union

ARTICLE

ScienceDirect

Which behaviours matter? Prioritising food waste reduction behaviours for targeted policy and program approaches

This study utilises an Impact-Likelihood methodology to identify the range of behaviours associated with household food waste reduction and to group them according to their impact and likelihood of adoption, as well as their current adoption rates.

Boulet, M., Stott, A. W., & Kneebone, S. (2023).

ARTICLE

Vox

Coming soon: Beef, coffee, and chocolate, without a side of environmental destruction

In December, the European Union agreed on a landmark law to prevent companies from selling beef, coffee, and a handful of other commodities in the EU if they're grown on land where forests were recently cleared.

PAPER

Frontiers

The land use, trade, and global food security impacts of an agroecological transition in the EU

Using a world biomass balance model, in this paper we show that a deep agroecological transition in the EU, if accompanied by a shift of EU food regimes towards more plant-based diets, is not detrimental to global food security. Schiavo, M., Mouël, C. L., Poux, X., & Aubert, P. (2023).

JOURNAL

ScienceDirect

Volume, 134

Page, 106925

Enacted relations and the resilience of territorially embedded production systems in Europe

Building on the social-ecological resilience approach (Darnhofer (2020b), this paper examines the resilience of territorially embedded production systems in different regions of Europe, including emergent and ongoing patterns of material, social and cultural relations.

Von Münchhausen, S., Kirwan, J., Maye, D., Muñoz-Rojas, J., Correia, T. P., Prosperi, P., & Vergamini, D. (2023).

JOURNAL

ScienceDirect

Volume, 157

Issue, 105855

The MSC Fisheries Standard Review policy development process

This paper discusses the Fisheries Standard Review (FSR) process, which aims to keep the standard updated to reflect evolving fisheries management best practices and scientific findings around the world.

Jardim, E., & Currey, R. J. C. (2023).

Funded by the European Union

Reports

REPORT

TT Food

Digital Technologies for Agriculture and Food Security

TT-Food is facilitating know-how transfer and discussions on feasible applications of digital technologies in tropical agriculture (i.e., interpretation of satellite images, drones for farmland evaluation, smart fertilizing and pesticide application, digital tools in water management, reduction of post-harvest losses, etc.). The focus is on enabling „self-sufficiency“ in food

REPORT

Ministry for the Environment (NZ)

Best practice communications for waste minimisation

This guide, Best practice communications for waste minimisation, is part of a strategic approach by the Ministry for the Environment (the Ministry) to improve the behavioural effectiveness of central and local government waste-related communications to households.

REPORT

McKinsey & NielsenIQ

Consumers care about sustainability—and back it up with their wallets

Do consumers really care whether products incorporate ESG-related claims? Do shoppers follow through and buy these products while standing in front of store shelves or browsing online? Do their real-life buying decisions diverge from their stated preferences? McKinsey and NielsenIQ undertook an extensive study seeking to answer these and other questions.

McKinsey & NielsenIQ. (2023)

REPORT

Issuu

Virginia Economic Review: Second Quarter 2023

This issue of Virginia Economic Review takes a deep dive into the controlled environment agriculture industry’s past, present, and future, while highlighting traditional agricultural operations in Virginia.

REPORT

Planet Tracker

Avoiding Aquafailure

Without change, aquaculture will fail to meet the world’s growing demand for seafood. Demand is expected to outstrip supply by 50 million tonnes by 2050, with worsening environmental impacts. This is ‘aquafailure’. Technology (offshore, land-based or cultivated seafood) can help but will not close this future demand gap on its own, nor fully solve the sector’s environmental issues. Instead, diversification away from fed aquaculture towards regenerative aquaculture for bivalves and seaweed can supply demand while benefitting biodiversity, but it requires capital investment.

Funded by the European Union

REPORT
Planet Tracker

Fishing for a recovery

This report argues that investors should financially support this kind of initiative, and provides a methodology and interactive tool to determine whether any given fishery would be a good candidate for an investment in the recovery of fish stocks. These initiatives are needed: whilst fisheries management support the long-term sustainability of fish populations, it has in many cases failed to sustain ecologically viable fish stocks or recover those already depleted.

REPORT
Efficiency for Access Coalition

Keep it Cool: Harnessing Cold Storage to Reduce Food Loss and Support Sustainable Food Systems in Emerging Economies

This brief provides insights on the state of the cold chain market in LMICs, and highlights innovative technologies, partnerships, and business models that have the potential to transform the cold chain landscape.

REPORT
UN

Review of Maritime Transport

This 2023 edition of the Review of Maritime Transport suggest that shipping patterns and trading routes are shifting, perhaps because of growing commercial tensions and a new geography of transport and trade. A clear result of this dynamic is that the average distance travelled for several commodities is increasing. Shipments of oil cargo and grain, for example, travelled longer distances in 2023 than any other year on record.

DEVELOPMENT & IMPLEMENTATION OF NEW TECHNOLOGIES

Publications

BOOK
ELSEVIER

Food Industry 4.0

Volume 4, Food Industry 4.0: Emerging Trends and Technologies in Food Production and Consumption covers several technologies (e.g., robotics, smart sensors, artificial intelligence, and big data) at different development and research levels in order to provide holistic multidisciplinary approaches that embrace simultaneously as many Industry 4.0 technologies as possible, reflecting the long journey of food from farm (or sea) to fork.

Funded by the European Union

ARTICLE
ScienceDirect
Volume, 244

Developing machine learning approaches to identify candidate persistent, mobile and toxic (PMT) and very persistent and very mobile (vPvM) substances based on molecular structure

This study developed machine learning models based on different molecular descriptors (MDs) and defined applicability domains for the screening of PMT/vPvM substances.

Han, M. H., Jin, B., Liang, J., Huang, C., & Arp, H. P. H. (2023).

JOURNAL
ScienceDirect
Volume, 212

Non-destructive internal disorder segmentation in pear fruit by X-ray radiography and AI

This work addresses the challenge of internal defects segmentation in pear fruit (cv. Conference) based on high-throughput inline X-ray radiography images in combination with deep learning.

Tempelaere, A., Phan, H. M., Van De Looverbosch, T., Verboven, P., & Nicolaı, B. (2023).

ARTICLE
Taylor & Francis Online

The influence of Industry 4.0 enabling technologies on social, economic and environmental sustainability of the food sector

In the context of great changes in the food industry, the aim of this research is to investigate if and how the implementation of 4.0 enabling technologies can enhance the economic, environmental and social sustainability of the food sector.

Stefanini, R., & Vignali, G. (2023).

ARTICLE
ELSEVIER

Microbial foods for improving human and planetary health

The current food production system is negatively impacting planetary and human health. A transition to a sustainable and fair food system is urgently needed. Microorganisms are likely enablers of this process, as they can produce delicious and healthy microbial foods with low environmental footprints.

ARTICLE
PLOS ONE

Gut microbiota fingerprinting as a potential tool for tracing the geographical origin of farmed mussels (*Mytilus galloprovincialis*)

Identifying the provenance of seafood is critical to combat commercial fraud, enforce food safety regulations and ensure consumers' confidence. Hence, the current study aimed to determine if the bacterial composition present in the digestive gland and stomach of *M*. *galloprovincialis* mussels could be used as traceability approach to discriminate their geographic origin.

Del Rio-Lavín, A., Monchy, S., Jiménez, E., & Pardo, M. Á. (2023).

Funded by
the European Union

ARTICLE
ScienceDirect
Volume, 124

Patterns in official food control data – Modelling dioxin and PCB profiling data for authentication of Baltic Sea salmon
Here, official food control data of dioxin and PCB congener concentrations in salmon was used separately and combined as parameters for building one-class classification models using data driven soft independent modelling of class analogy (DD-SIMCA).
Wilde, A. S., Sørensen, S. J., Kucheryavskiy, S., Ланге, Е. К., & Ballin, N. Z. (2023b).

ARTICLE
Dock

Blockchain Food Traceability: Enhancing Transparency and Safety
In this article, blockchain experts go over why food traceability is important, the challenges of the current traceability methods, how Verifiable Credential technology can be integrated in food supply chains, and the benefits of blockchain food traceability technology for supply chain stakeholders, governments, and customers.

REPORT
Libelium

Libelium Smart Cities IoT Solution REPORT
The Smart Cities market is rapidly developing. Smart Cities look for sustainable growth, diminishing the impact of economic and demographic changes and taking advantage of IT and communication technologies.

ARTICLE
Boundaryless

The Key Concepts in Platform Design
Discover essential platform design concepts with this comprehensive guide, exploring crucial principles, network properties, growth strategies, and other key elements you have to master to unlock the full potential of your platform design journey.
Cicero, S. (2023)

ARTICLE
ScienceDirect
Volume, 206

An introduction to artificial intelligence in machine vision for postharvest detection of disorders in horticultural products
The aim of this article is to introduce recent developments in AI for extracting information on postharvest disorders from complex image data obtained by modern imaging systems to the non-AI expert.
Tempelaere, A., De Ketelaere, B., He, J., Kalfas, I., Pieters, M., Saeys, W., Van Belleghem, R., Van Doorselaer, L., Verboven, P., & Nicolaı, B. (2023).

Reports

ARTICLE
IBM

Blockchain and artificial intelligence (AI)
The convergence of blockchain and AI brings new value to business.

Funded by
the European Union

REPORT

FAO

Feasibility study for application of digital technologies for improved traceability and transparency along the agrifood value chains

The present study takes the approach of a case study to understand the digital landscape in NENA, examine barriers and feasibility, provide possible solutions and suggest roles for the various stakeholders. Two regionally strategic horticulture value chains were selected for practical recommendations arising from this study.

REPORT

LACER

Digital Connectivity for Inclusion and Growth

Latin America and the Caribbean (LAC) continues to competently manage challenges of weak global demand, higher debt, uncertainty surrounding the war in Ukraine, and the ongoing although diminishing inflationary pressures affecting many regions of the world. Overall, well-grounded macro policy responses—unimaginable for the region a generation ago—have led not only to an increased resilience to shocks, but to a superior inflation record, sounder financial sectors, and relative calmness in global markets. Employment has largely recovered, and poverty and inequality are moving toward pre-2019 levels. Forecasts for the region have been steadily upgraded over the last six months.
Beylis, G., Maloney, W., Vuletin, G., Zambrano Riveros, J.A. (2023).

BLOG

Peakbridge

Bytes to Bites Vol. 2 – From farm to fork: Leveraging AI in the Food Value Chain

In today's world, the global food value chain is like a complex puzzle that spans the planet, enabling the distribution of vital sustenance. This system involves numerous stakeholders, including farmers, manufacturers, distributors, retailers, and consumers, all interconnected in a delicate balance. In the 2020s, the world witnessed the disruption of this intricate network with the COVID-19 pandemic. Another more recent example is the Avian Flu outbreak in the United States, which resulted in economic costs ranging from US$2.5 billion to US$3 billion, food shortages and exacerbated food prices. Imagine artificial intelligence (AI) and blockchain decentralized tracking networks had been in place to collect infectious disease data transparently and reliably and to forecast supply and demand with an optimized food network distribution.
Eva, Martinović, A., Troya, A., & Savion, O. (2023).

Funded by
the European Union

Publications

ARTICLE

Food Security

The effectiveness of food system policies to improve nutrition, nutrition-related inequalities and environmental sustainability: a scoping review

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.

Burgaz, C., Gorasso, V., Achten, W., Batis, C., Castronuovo, L., Diouf, A., Asiki, G., Swinburn, B., Unar-Munguía, M., Devleesschauwer, B., Sacks, G., & Vandevijvere, S. (2023).

LETTER

Norges Investmen Bank

Feedback to the European Commission on the proposed Regulation on ESG ratings

Norges Bank Investment refers to the feedback period on the European Commission's legislative proposal for a Regulation on the transparency and integrity of Environmental, Social and Governance (ESG) rating activities, adopted on 13 June 2023.

ARTICLE

ScienceDirect

Volume, 168

Disentangling the complex longitudinal relationships between business model innovation and firm performance

Despite the increasing interest in business model innovation (BMI), the literature lacks solid empirical evidence about its impact over time. We address this gap by taking an element-based perspective, differentiating three core dimensions: value creation, value proposition, and value capture.

Menter, M., Göcke, L., Zeeb, C., & Clauß, T. (2023).

Funded by the European Union

ARTICLE
Nature Food

Vegans, vegetarians, fish-eaters and meat-eaters in the UK show discrepant environmental impacts

Modelled dietary scenarios often fail to reflect true dietary practice and do not account for variation in the environmental burden of food due to sourcing and production methods. Here we link dietary data from a sample of 55,504 vegans, vegetarians, fish-eaters and meat-eaters with food-level data on greenhouse gas emissions, land use, water use, eutrophication risk and potential biodiversity loss from a review of 570 life-cycle assessments covering more than 38,000 farms in 119 countries.

Scarborough, P., Clark, M., Cobiac, L., Papier, K., Knüppel, A., Lynch, J., Harrington, R., Key, T. J., & Springmann, M. (2023).

ARTICLE
NPR

Prescriptions for fresh fruits and vegetables help boost heart health

The idea of food as medicine dates back to the ancient Greek doctor Hippocrates, and a new study adds to the evidence that a diet full of fruits and vegetables can help improve heart health. The research comes amid an epidemic of diet-related disease, which competes with smoking as a leading cause of death.

Aubrey, A. (2023).

ARTICLE
AHA

Impact of produce prescriptions on diet, food security, and cardiometabolic health outcomes: A multisite evaluation of 9 produce prescription programs in the United States

Produce prescriptions may improve cardiometabolic health by increasing fruit and vegetable (F&V) consumption and food insecurity yet impacts on clinical outcomes and health status have not been evaluated in large, multisite evaluations..

Hager, K., Du, M., Li, Z., Mozaffarian, D., Chui, K., Shi, P., Ling, B., Cash, S. B., Folta, S. C., & Zhang, F. F. (2023).

ARTICLE
ScienceDirect
Volume, 109

Sustainability, nutrition, and scientific advances of functional foods under the new EU and global legislation initiatives

Here, an integrative approach between scientific and technological advancement, policymakers, consumers, and society, to design sustainable, functional foods is presented, focusing on food innovation for developing bioactive-rich ingredients and tackling non-communicable diseases (NCD).

Granato, D., Zabetakis, I., & Koidis, A. (2023).

ARTICLE
ScienceDirect
Volume, 173

Global value chains and firms' environmental performance

This paper analyzes the link between joining global value chains (GVCs) and firms' environmental performance.

Siewers, S., Martínez-Zarzoso, I., & Baghdadi, L.

Funded by the European Union

ARTICLE
Nature
Food

EU-27 ecological footprint was primarily driven by food consumption and exceeded regional biocapacity from 2004 to 2014

Here we investigate the resource dependence and carbon emissions of the EU-27's food systems from 2004 to 2014 via an ecological footprint (EF)-extended multi-regional input–output approach, accounting for demand and supply (including trade), and considering multiple externalities.

Galli, A., Antonelli, M., Wambersie, L., Bach-Faig, A., Bartolini, F., Caro, D., Iha, K., Lin, D., Mancini, M. S., Sonnino, R., Vanham, D., & Wackernagel, M. (2023).

PAPER
Open Book
Publishers

Reshaping Food Systems to Improve Nutrition and Health in the Eastern Mediterranean Region

Improving the diets of people of all ages in the Eastern Mediterranean Region is a crucial step towards better health. After a short introduction into the concept of the food systems and nutritional situation in the region, this book outlines the status and progress of the WHO's six game-changing actions within the frame of the UN Food Systems Summit, and looks at opportunities to make food systems in the Eastern Mediterranean Region healthier and more sustainable.

Al-Jawaldeh, A., Meyer, A.L. (2023).

ARTICLE
Nature
Geoscience

Global increase in biomass carbon stock dominated by growth of northern young forests over past decade

Changes in terrestrial carbon storage under environmental and land-use changes remain a critical source of uncertainty in regional and global carbon budgets. We generated global maps of annual live vegetation biomass using L-band microwave vegetation optical depth

Yang, H., Ciais, P., Frappart, F., Li, X., Brandt, M., Fensholt, R., Fan, L., Saatchi, S., Besnard, S., Deng, Z., Bowring, S., & Wigneron, J. (2023).

REVIEW
Nature
Geoscience

Agroecology for a Sustainable Agriculture and Food System: From Local Solutions to Large-Scale Adoption

This review investigates to what extent agroecology can become the mainstream model for transforming agriculture toward more sustainable and resilient agri-food systems within the given economic and political context.

Ewert, F., Baatz, R., & Finger, R. (2023).

Funded by
the European Union

ARTICLE

MDPI

Beyond the IPCC for Food: An Overarching Framework for Food Systems Sustainability Assessment

While the clash between those who consider necessary and those who do not consider necessary the creation of this panel increases, this paper takes inspiration from this debate to highlight how strengthening the interactions between science and policy should be supported by increasing the informativeness of current sustainability assessments, regardless of the need for such a panel.

Caro, D., Sporchia, F., Antonelli, M., & Galli, A. (2023).

ARTICLE

WILEY

The 'need for speed': Towards circular disruption—What it is, how to make it happen and how to know it's happening

The concept of a circular economy has recently gained traction among scholars, policy-makers and businesses as a promising alternative. Yet our understanding of how to speed up the systemic transition from a linear economy paradigm towards a circular economy paradigm is lacking. In this paper, we address this research gap by introducing the concept of 'circular disruption' and by describing how such a disruption may unfold.

Blomsma, F., Bauwens, T., Weissbrod, I., & Kirchherr, J. (2022).

BOOK

IFPRI

The political economy of food system transformation: Pathways to progress in a polarized world

While the need to transform food systems is widely accepted, the policy pathways for achieving such a vision often are highly contested, and the enabling conditions for implementation are frequently absent. Moreover, transformation implicitly requires reforms that depart from the status quo, which will generate resistance from those groups that stand to lose the most.

Resnick, D., Swinnen, J. (2023).

REVIEW

ScienceDirect

Proposed solutions to anthropogenic climate change: A systematic literature review and a new way forward

The goal of this systematic literature review is to summarize the peer-reviewed literature on proposed solutions to climate change in the last 20 years (2002–2022), and to propose a framework for a unified approach to solving this climate change crisis.

Feigin, S. V., Wiebers, D. O., Lueddeke, G. R., Morand, S., Lee, K., Knight, A., Brainin, M., Feigin, V. L., Whitfort, A., Marcum, J. A., Shackelford, T. K., Skerratt, L. F., & Winkler, A. S. (2023).

Funded by the European Union

ARTICLE

PNAS

Organizational system thinking as a cognitive framework to meet climate targets

Here, we conjecture that system thinking is a cognitive framework observable at an aggregated group level and, therefore, organizations, not just individuals, can exhibit characteristic levels of system thinking.

Burato, M., Tang, S., Vastola, V., & Cenci, S. (2023).

Reports

REPORT

UN Food Systems

Making food systems work for people and planet.

The preparations for the UN Food Systems Summit +2 - Stocktaking Moment (UNFSS+2) witnessed significant global participation and engagement, with 101 countries submitting voluntary country reports. These reports provided insights into the progress and efforts being made to transform food systems worldwide.

REPORT

Agrifoodture

Roadmap for sustainable transformation of the Danish Agri-Food system.

The proposed research and innovations within land use, land management and agricultural production systems contribute significantly both to national and international missions. However, investments in research and innovation are essential to achieve the goals in order to provide the basis for substantial reductions in GHG emissions, nitrogen and phosphor loadings to the freshwater and marine ecosystems, and pesticide use, as well as changes in land use and management supporting biodiversity

Olesen, J.E., Christensen, S., Jensen, P.R. and Schultz, E. (2021).

ARTICLE

FCRN

What are food systems?

Many social, economic, moral, and environmental concerns are interconnected and interact with each other through food, and the roles it plays in human lives and humanity's collective activity. Fully understanding the causes and solutions to these concerns is not possible when thinking about them in isolation from one another, and from the whole of which they are a part. The conceptual tools that enable us to overcome this siloed thinking are collectively known as 'systems thinking'.

Lee-Gammage, S. (2017).

PROJECT

UNCTAD

The costs of achieving the Sustainable Development Goals

The project focuses on six transformative “pathways” for sustainable development. It also estimates the costs of achieving gender equality for certain SDG indicators.

Funded by the European Union

REPORT
BCG

Which innovation model is right for your company?
BCG conducted a research to determine which types of innovation models leaders use, which models are most successful in which industries, and which underlying capabilities are necessary to deliver on each model.

REPORT
ISS ESG

2023 Global Regulatory Update
In the following chapters, ISS ESG takes a closer look at the evolution of the global sustainable investment regulatory landscape to date, analyzing the different regulatory initiatives across key themes and identifying some of the practical and implementation challenges.

REPORT
Green Protein

Plant-Powered Politics Europe's shift towards a plant-based system
This document contains a comprehensive overview of the reasons why Europe needs a food system transition and highlights the wide range of benefits linked to reducing the consumption of animal-based proteins.

REPORT
AGFUNDER

Africa AgriFoodTech Investment Report 2023
The second edition of the Africa agrifoodtech investment report comes with good and bad news. In it, we detail the record-breaking levels of investment in food and agriculture startups in 2022, when dollar volumes bucked the global decline in venture capital investment to reach $636 million, a 25% increase compared to 2021. In 2022, Africa was the only region in the world to post gains.

PRESS RELEASE
WBA

Research finds more than 90% of food and agriculture companies don't do enough to farm sustainably or provide healthy food
WBA analysed the 350 most influential food and agriculture companies around the world, including Bayer, Unilever and Walmart, to ensure the industry is held accountable for its role in contributing to healthier, more sustainable and more equitable food systems.

REPORT
FAO

The Impact of Disasters on Agriculture and Food Security 2023
With this report, the Food and Agriculture Organization of the United Nations (FAO) presents groundbreaking evidence on the global impact of disasters on agriculture and food security over the last three decades.

REPORT
WHO

Connecting Global Priorities: Biodiversity and Human Health
The greatest challenge to protecting Planetary Health over the coming century is to develop the capability of human civilisations, to interpret, understand, and respond to the risks that we ourselves have created and this Review is a major advance in our understanding of these risks and the benefits of actions to reduce them.

Funded by
the European Union