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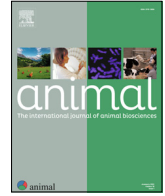
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Editorial: Challenges of food and feed for the future

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Introduction

The “Food and Feed for the Future” workshop, sponsored by the OECD Cooperative Research Programme on Sustainable Agricultural and Food Systems and organised by the French Animal Production Federation (AFZ), INRAE and CSIRO, was held on the 1st of September 2023 at ISARA in Lyon (France). The proceedings are available as a PDF eBook (<https://doi.org/10.25719/AFZ.2024.001>). The workshop was aimed at all stakeholders interested in understanding and forecasting the future of food and feed, and provided an opportunity to present and discuss the challenges and opportunities for protein production from animals, plants and novel protein sources (such as insects, yeast, microalgae, cellular agriculture) and their contribution to the development sustainable food systems. The present supplement includes a selection of five invited papers presented during the workshop.

Introduction to the papers of this issue

Meeting the nutritional needs of the population while minimising environmental impacts is the key issue for sustainable agricultural systems. In their study, [Aubin et al. \(2025\)](#) examine the environmental trade-offs of meeting the nutritional requirements of adult human populations with a diet lower in animal proteins. The paper highlights that optimised diets that are healthier and also affordable for low-income populations reduce several environmental impacts, such as climate change, but increase impacts on biodiversity and water use. Dietary recommendations and agricultural practices must evolve to meet human health goals whilst remaining within planetary boundaries.

In terms of agricultural practices, [Dumont et al. \(2025\)](#) investigate five case studies to examine the principles, barriers and enablers of agroecological livestock production systems. The analysis of the case studies highlights how agroecology is giving space to different equilibrium among principles, adapting to the needs of farmers and local communities. However, policy, inadequate infrastructures and, to a lesser extent, market and technological

issues were frequently reported as being among the main disabling factors to the scaling out and scaling up of agroecological systems.

Using the case of milk and plant-based beverages, [Maree et al. \(2025\)](#) highlight the need for holistic, sector-specific sustainability assessments that include nutrition, environment and socio-economics. The paper addresses the shortcomings of existing measures in these three dimensions and makes recommendations. The paper advocates localised and holistic measures of sustainability that are both sector and context specific to avoid masking poor performance through single metrics.

In terms of new foods, cell-based foods are benefiting from increasing media interest, growing investment and marketing approvals in some countries, but need further investigation in terms of feasibility, economic interest and environmental impact. [Olenic et al. \(2025\)](#) focus on a key aspect of cellular agriculture: cells. The development of cell-based products, including cultured meat, requires an understanding of the properties of the cells used for this purpose. The paper reviews the scientific literature on several relevant cell types to facilitate research in cellular agriculture, including mesenchymal stromal cells, myoblasts and pluripotent stem cells.

Finally, [Hocquette et al. \(2024\)](#) point out that few studies have addressed the safety, nutritional properties and environmental impact of cell-based novel food, making it impossible to verify the claims made by companies in the sector with complete transparency. This lack of knowledge and the complexity of the ethical aspects related to societal, legal and political issues make the future of ‘cultured meat’ uncertain compared to other potential sustainable solutions for land-based animal food production.

Conclusion

Different options need to be considered to address the shift towards sustainable food systems: firstly, the development of more sustainable land-based food systems that combine plant and animal food production based on agroecological principles. New technologies, such as cellular agriculture, could contribute to the solution, but many technical, economical and societal issues remain to be resolved.

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Not applicable.

Data and model availability statement

Not applicable.

Declaration of Generative AI and AI-assisted technologies in the writing process

During the preparation of this work the author(s) did not use any AI and AI-assisted technologies.

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R. Baumont: Writing – review & editing, Writing – original draft. **D. Morgavi:** Writing – review & editing. **A. Wezel:** Writing – review & editing.

Declaration of interest

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Transparency Declaration

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