

Sustainable Innovations In Food Production And Processing: Linking Food, Health, Nutrition And Environment

Pragya Mishra¹, Kuldeep Baudh², Ratna Shanker Mishra³, Jai Prakash Verma²

¹Food Processing and Management, Deen Dayal Upadhyaya Kaushal Kendra, Rajiv Gandhi South Campus, Banaras Hindu University, Varanasi, Uttar Pradesh, India.

²Institute of Environment and Sustainable Development, Banaras Hindu University, Varanasi, Uttar Pradesh, India.

³Centre for Tourism & Hospitality Studies (CTHS), Faculty of Arts, Banaras Hindu University, Varanasi, Uttar Pradesh, India.

Corresponding Author Email ID: pragyafpm@bhu.ac.in

Received: 26/08/2026

Accepted: 09/09/2026

Published: 30/09/2026



Dr. Pragya Mishra



Dr. Kuldeep Baudh



Dr. Ratna Shanker Mishra



Dr. Jay Prakash Verma

Journal of Applied Pharmaceutical Sciences and Research, (2026);

DOI: 10.31069/japsr.v9i3.edi

EDITORIAL

Food systems are fundamental to human health, nutritional security, economic development, and environmental sustainability. However, the growing challenges of food insecurity, malnutrition, climate change, depletion of natural resources, food loss and waste, and environmental degradation have highlighted the need to rethink conventional approaches to food production and processing. Scientific innovation and interdisciplinary collaboration are essential to developing food systems that deliver safe, nutritious, affordable, and accessible food while reducing environmental impacts. The special issue entitled "Sustainable Innovations in Food Production and Processing: Linking Food, Health, Nutrition and Environment" brings these interconnected priorities into focus and provides a platform for advancing scientific discussion on sustainable food systems.

The relationship between food, health, nutrition, and the environment extend across the entire food chain, from agricultural production and raw-material selection to processing, preservation, packaging, distribution, and consumption. A sustainable approach must therefore integrate nutritional quality, public health, technological efficiency, resource conservation, and economic feasibility rather than considering these dimensions independently. Artificial intelligence and data-driven approaches may further support quality assurance, traceability, supply-chain management, and resource optimization. Nevertheless, the adoption of such technologies requires careful assessment of food safety, nutritional outcomes, operational costs, scalability, and environmental performance. Scientific validation is essential to ensure that technological advancement translates into meaningful benefits for consumers and food producers.

Nutrition and public health are equally important considerations in the transformation of food systems. Malnutrition encompasses both inadequate nutrient intake and diet-related health risks, creating a need for food products that combine safety, nutritional adequacy, and affordability.^[1] Environmental sustainability requires a corresponding shift towards resource-efficient production and circular approaches to food processing. Agricultural and food-industry by-products may contain proteins, dietary fibre, bioactive compounds, and other potentially valuable constituents. Their recovery and conversion into useful ingredients or products can reduce waste and create additional economic opportunities, provided that appropriate safety and quality standards are maintained. Sustainable packaging, energy-efficient processing, water conservation, wastewater treatment, and responsible residue management are also important components of environmentally sound food manufacturing. These priorities are closely connected with the United Nations Sustainable Development Goals, particularly

those concerning zero hunger, good health and well-being, responsible consumption and production, climate action, and the conservation of ecosystems.^[2] Progress towards these goals requires collaboration among food scientists, nutritionists, environmental researchers, healthcare professionals, engineers, entrepreneurs, industry representatives, and policymakers. Such collaboration can support the development of technologies and interventions that are scientifically sound, socially relevant, economically feasible, and environmentally responsible.

Banaras Hindu University (BHU), established in 1916 by Mahamana Pandit Madan Mohan Malaviya, provides an academic setting for interdisciplinary engagement with these challenges. At the university's Rajiv Gandhi South Campus, the Deen Dayal Upadhyaya Kaushal Kendra promotes skill-oriented education and professional development. Its Food Processing and Management programme integrates theoretical learning with practical training in food processing, food analysis, food microbiology, product development, packaging, quality control, and management. This combination of scientific knowledge and applied skills can help prepare students for emerging opportunities in food manufacturing, quality assurance, research and development, food safety, entrepreneurship, and related sectors.

The Institute of Environment and Sustainable Development at BHU complements this approach through its focus on environmental challenges and sustainable development. Interdisciplinary engagement between food-processing education and environmental research can encourage resource-efficient technologies, waste valorization, sustainable production practices, and evidence-based environmental management. Such collaboration is particularly relevant to developing practical solutions that respond to local resource conditions while addressing broader national and global sustainability priorities.

In this context, *FoodSpark* is an event which has been organized every year for the celebration of World Food Day on 16th of October since 2019 by Food Processing and Management, DDU Kaushal Kendra, RGSC, BHU which was continued every last 4 year. This year we are celebration *FoodSpark 5.0*, organized in association with World Food Day 2026 (Theme: Innovate Today and sustain Tomorrow), provides a platform for promoting scientific awareness, creativity, and innovation in the food sector. The associated national conference, "Sustainable Innovations in Food Production and Processing: Linking Food, Health, Nutrition and Environment," brings together researchers, academicians, students, industry professionals, entrepreneurs, and other stakeholders to exchange scientific knowledge and explore emerging approaches to sustainable food production and processing. The initiative encourages engagement with food innovation, nutrition, health, environmental protection, and the practical application of scientific knowledge.

The present special issue aims to highlight research and scholarly contributions concerning sustainable food production, novel processing and preservation technologies, food safety and quality, functional foods, nutrition and public health, sustainable packaging, waste valorization, circular bioeconomy, and emerging biotechnological and digital applications. Research addressing the environmental performance of food-processing systems, the utilization of agricultural by-products, resource efficiency, and industry-academia collaboration can further strengthen the scientific basis for sustainable innovation.^[3] By bringing these themes together, the issue seeks to encourage a broader understanding of how advances in food science and technology can contribute to human well-being and environmental responsibility.

As editors, we recognize that sustainable food systems cannot be achieved through isolated interventions. They require coordinated efforts supported by rigorous scientific research, appropriate technologies, responsible production practices, and continuous evaluation of nutritional, environmental, and socioeconomic outcomes. Innovations should be assessed not only in terms of their technical performance but also in terms of food safety, nutritional value, resource efficiency, feasibility, and long-term sustainability. A strong evidence base is indispensable for distinguishing promising approaches from those that require further investigation. We hope that this special issue will stimulate interdisciplinary scientific dialogue, encourage collaboration among academic and industrial stakeholders, and support the development of evidence-based solutions for contemporary food-system challenges. By connecting food production and processing with nutrition, public health, and environmental sustainability, the contributions to this issue can help identify research priorities and opportunities for practical application.

We sincerely acknowledge the efforts of the participating researchers, authors, reviewers, academic colleagues, and institutions whose contributions support scientific advancement. Initiatives such as *FoodSpark 5.0* also highlight the importance of engaging students and young professionals in the pursuit of innovative and sustainable solutions.

Ultimately, sustainable innovation in food production and processing must be guided by a shared commitment to food safety, nutritional well-being, public health, and environmental integrity. We anticipate that this special issue will contribute to continued research and constructive collaboration towards food systems that support healthier populations and a more sustainable planet.

References

1. Madzorera I, Jaacks L, Paarlberg R, Herforth A, Bromage S, Ghosh S, Myers SS, Masters WA, Fawzi WW. Food Systems as Drivers of Optimal Nutrition and Health: Complexities and Opportunities for Research and Implementation. *Current Development in Nutrition*. (2021) May 24;5(Suppl 3):nzab062. doi: 10.1093/cdn/nzab062.

2. Rabbi MF, Amin MB. Circular economy and sustainable practices in the food industry: A comprehensive bibliometric analysis. *Cleaner and Responsible Consumption*. (2024) 14,100206, <https://doi.org/10.1016/j.clrc.2024.100206>.
3. Siyabonga G, Asanda A, Nyasha C, Charles M. Energy-Efficient Innovations in Agricultural and Food Systems: A Systematic Review of Productivity and Sustainability Outcomes and Adoption Trends. *Energies*. (2026). 19. 10.3390/en19041092.

How to cite this article: Mishra P, Baudh K, Mishra RS, Verma JP. Article Title. *Journal of Applied Pharmaceutical Sciences and Research*. 2026; 9(3):I-II Doi : 10.31069/japsr.v9i3.edi