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Editorial

Food system management towards a sustainable end to hunger (SDG2)

Olubukola O. Babalola FAS

Food Security and Safety Focus Area, Faculty of Natural and Agricultural Sciences, North-West University, Private Mail Bag X2046, 2735, Mmabatho, South Africa.

***For correspondence**: **e-mail**: olubukola.babalola@nwu.ac.za

With the emerging threats to global food security, it is now more urgent to take proactive steps toward ensuring the sustainability of food systems that will support the increasing global population. Hence, the current themed edition of this journal 'Food System Management towards Sustainable End to Hunger-SDG2' is a relevant and timely topic to encourage the participation and contributions of active researchers on measures of combating food insecurity and hunger. The themed edition comprises a set of research and review articles focusing on the relevant elements of food security, sustainability and the effect of incorporating newer technologies in agriculture. Every paper in this edition presents a specific perspective on the comprehensive process that is necessary to realise SDG2 which aims to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture.

In the first paper in this issue, Oyeniyi et al offer a comprehensive analysis of intensive contract poultry farming in Nigeria. The following research addresses issues associated with the implementation of contract farming which is a form of vertical integration within the agricultural commodity chain. The authors carefully analyse the effects, prospects and issues associated with implementing contract farming in Nigeria as evidenced in the tenacity of backyard poultry flocks. The current review lays the groundwork for analysing the possibilities of contract farming as well as the opportunities and threats involved with sustainable food production, especially the need to succeed in industrial and local approaches to farming.

Similar to the above analysis, Andrew Tapiwa Kugedera's review about integrating in situ rainwater harvesting with integrated nutrient management (INM) in marginalized areas is very useful to expand the knowledge for solving the soil moisture stress and infertile factors that are limiting the crop production in the following years in the arid area. Kugedera’s work therefore supports and promotes the use of cultural techniques combined with modern intelligent techniques as strategies for creating sustainable soil health, yield productivity, and food security for vulnerable communities.

The study by Oshodi et al about the bioprospecting of Nigerian tomato cultivars against Fusarium oxysporum lycopersici under drought stress is landmark research toward conserving tomato yield in Nigeria. This research establishes cultivars that are resistant to both Fusarium wilt and drought, giving new possibilities for improving the ability for food production through increasing crop resilience in the context of climate change.

In a technologically oriented view of the Nigerian agricultural process, Sakpere and colleagues

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examine the applicability of design thinking as an instrument for change. Their research work presents a human-centered, iterative methodology in addressing the problem of post-harvest loss, showcasing how design thinking can be harnessed to develop scalable and sustainable solutions tailored to the needs of Nigerian stakeholders.

Oyedokun et al. also add their voice to the literature on the application of local resources in the industrialisation of food and pharmaceutical industries by isolating and categorising wild lactic acid bacteria (LAB) from Indigenous sources. Some of the LAB isolates tested in the study have been found to produce high levels of exopolysaccharide. It is suggested that these strains be further developed as starter cultures, particularly in the dairy industry. This research not only enhances our understanding of the potential of local microbiota but also supports the economic sustainability of the food industry in Nigeria.

Tiamiyu et al. further give a critical assessment of histopathological alterations in the visceral organs of African catfish fed with herbal plant additives. The scarcity of studies concerning the impact of varying concentrations of such herbs on fish wellbeing enables them to advance their knowledge on the composition and formulation of feeds, which is an important aspect of the sustainable growth of the aquaculture industry.

Olawuyi et al., in their effort to investigate the genetic basis of crop resistance, investigate DNA methylation characteristics in the recovery of maize from maize streak disease (MSD). Their research can open up further advances in epigenetic processes that lead to enhanced disease tolerance, which could help inform the creation of new maize varieties that are more resistant and can withstand the biotic stresses associated with the changing climate.

Concerning the relationship between technology and food insecurity, Olawole et al. analyze tech-enabled solutions for mitigating student hunger. Their systematic analysis of food waste, community dynamics, and accessibility supports the use of technology in boosting food supply chain solutions in institutions since food insecurity has a profound impact on academic performance.

To support the conclusions made in the current systematic review of the challenges affecting sustainable food systems, it is crucial to reinforce the ideas about the multidimensional nature of food security. Hence, while Ugoala has identified rather evident and rather subtle threats to the food chain at the worldwide level, he gives further guidance on how to improve each node of the food system in a way that would make it sustainable.

The molecular screening of potential Bacillus species bacteriocin starter cultures by Ozabor et al. is a ground-breaking work in the use of biotechnology to improve traditional Nigerian condiments. Their findings on isolating and characterizing nontoxigenic Bacillus species harboring bacteriocin genes have major importance in the safety and quality of fermented foods, contributing to the advancement of food safety standards.

Okocha et al. write about a burning topic of climate change and its effects on poultry production. Thus, their study on IoT-driven strategies for coping with increased ambient heat load in poultry pens provides valuable insights into how to keep poultry healthy and productive in future high temperature environments, thus providing the stability of the poultry supply chain.

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Imade et al. describe the biocontrol agents, nitrogen-fixing bacteria, and indole acetic acid-producing bacteria in anthill soil and explore the possible contribution of these microorganisms in increasing soil fertility and yield of crops. This paper largely provides insightful findings to the line of research on the use of natural resources as instruments for enhancing the sustainability of agriculture practices and food production systems.

Abubakar et al emphasize the nutritional and microbial differences between traditional drying methods and the current practices. Consequently, the results point to oven drying as a process that further augments the nutritional value of fish in terms of crude protein, lipid, and carbohydrate values as well as reducing microbial activities. Therefore, this research emphasizes the need to embrace better methods of preservation to better improve the quality and safety of food even in the rural and even urban areas.

Ayangbenro et al. overview the changes in agricultural land use due to urbanization. Their study, which employed Landsat data for a period of 21 years, establishes the negative impacts of construction in the country resulting in a decline in the size of arable land. In view of these findings, this study urges governments and policymakers to take appropriate actions to prevent the current rate of conversion of agricultural lands for other uses and to find other ways of farming to feed the increasing population and accommodate the growing urbanization.

Finally, in another futuristic article, Akanmu and Babalola explore the benefits of fungi in the management of food insecurity across the globe. According to the authors, the use of fungi can help in enhancing soil fertility, combating plant diseases, and promoting the nutritional values of food from natural products. As such, fungi play an indispensable role in the advancement of a sustainable and secure food production system where they act as biostimulants to increase plant tolerance to abiotic stress and aid in food processing and preservation.

Altogether, as we continue to work towards the realization of SDG2, the papers featured in this edition underscore the need to foster multi-disciplinary discourse and practice, as there is no one-size-fits-all solution to the problems of food insecurity. Every manuscript contributes not only to the identification of solutions to particular aspects of the management of food systems but also to the understanding of their relation to sustainable development. We expect that these studies will spur more research and initiatives toward the achievement of food security for everyone.