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Editorial

Catalysing research for development to bolster food security

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ABSTRACT
The African Journal of Rural Development (AFJRD) is a peer-reviewed scholarly journal which by nature of its scope (rural development) publishes articles from a diversity of themes and disciplines with perspectives on the well-being of rural livelihoods. The papers published in this Issue (Volume 3, Issue 2) fall within the broad thematic categories of (a) Agricultural Extension and Advisory Services, (b) Natural Resources Management, (c) Biotic and Abiotic factors, (d) Circular Economy. These are very topical themes in the discourse on food and nutrition security for rural development. Dissemination of knowledge and innovations on those themes is important for promoting socio-economic development. This is especially important since the most dominant theme in agricultural research for development (AR4D) is usually agricultural productivity which responds to only one dimension of food and nutritional security, namely, food availability. The papers in this issue depict research for development that does not only address food availability but the other aspects, of food access, food stability and food utilization as well as dimensions of food and nutritional security. Optimistically, the readership will find these intriguing, thought-provoking and useful for catalysing further research for development to generate new knowledge and innovations to be deployed in rural development interventions.

Keywords: Agricultural research for development, peer-reviewed, rural development, scholarly journal

RÉSUMÉ
Le Journal Africain du Développement Rural (AFJRD) est une revue scientifique qui, par sa portée (développement rural), publie des articles sur une diversité de thèmes et de disciplines avec des perspectives sur le bien-être des moyens de subsistance ruraux. Les articles publiés dans ce numéro (volume 3, numéro 2) appartiennent aux grandes catégories thématiques a) Vulgarisation agricole et services consultatifs, b) Gestion des ressources naturelles, c) Facteurs biotiques et abiotiques, d) Économie circulaire. Ce sont des thèmes très actuels dans le discours sur la sécurité alimentaire et nutritionnelle pour le développement rural. La diffusion des connaissances et des innovations sur ces thèmes est importante pour promouvoir le développement socio-économique. Ceci est particulièrement important car le thème le plus dominant dans la recherche agricole pour le développement (AR4D) est généralement la productivité agricole qui ne répond qu'à une seule dimension de la sécurité alimentaire et nutritionnelle, à savoir la disponibilité des aliments. Les articles de ce numéro décrivent la recherche pour le développement qui

aborde non seulement la disponibilité des aliments, mais aussi les autres aspects de l'accès aux aliments, de la stabilité et de l'utilisation des aliments, ainsi que les dimensions de la sécurité alimentaire et nutritionnelle. Avec optimisme, le lectorat les trouvera intrigantes, inspirantes et utiles pour catalyser d'autres recherches sur le développement afin de générer de nouvelles connaissances et innovations à déployer dans les interventions de développement rural.

Mots-clés: Recherche agricole pour le développement, revue scientifique, développement rural, revue scientifique

INTRODUCTION

The African Journal of Rural Development (AFJRD) is multi-disciplinary peer-reviewed journal with a diverse scope in terms of its focus and interest. This is mainly because "rural development", which per definition is the process of designing and implementing actions associated with improving the quality of life and economic well-being of people living in rural areas, necessitates an integrated approach that deploys knowledge from diverse disciplines. Although many scholarly journals are established every year in Africa, only a few are able to sustain operations beyond the first Volume and/ or Issue. It is therefore, very gratifying to have the Third Volume of the AJRD. The nine peer-reviewed papers that merited publication in this Issue of the AJRD Volume 3 (2) represent broad themes of (a) Agricultural Extension and Advisory Services (Karubanga and Agea, 2018; Kibii and Kipkorir, 2018); (b) Natural Resources Management (Chemutai *et al.,* 2018; Egeru *et al.*, 2018; Esalm *et al.,* 2018; Kiyimba and Kugonza, 2018); (c) Biotic and Abiotic factors (Abedalla *et al.,* 2018; Ngala *et al.,* 2018); and (d) Circular Economy (Edimu *et al.,* 2018). These thematic areas are important in the concerted effort to address the four dimensions of food and nutrition security, namely: food availability, access to food, food use and utilization, and, food stability (Figure 1). As indicated in Table 1, all the dimensions of food and nutrition security present opportunities for research for development (R4D) efforts to generate knowledge and innovations needed for enhanced agricultural productivity and rural development.

Agricultural Extension and Advisory Services. All global frameworks underline the importance of food and nutritional security and the obligation to eradicate food insecurity in all its forms requires several coordinated efforts with involvement of several actors. Extension and advisory services are viewed as the broad effort intended to secure the full participation of rural populations in rural development efforts. Extension and advisory services are not only an agricultural technology transfer service but as observed by Rivera and Qamar (2003) they are a mechanism for linking between and among sectors to better engage the rural populations. The published articles in this Issue (Karubanga and Agea, 2018; Kibii and Kipkorir, 2018) that address the theme of agricultural extension and advisory services serve to highlight the fact that (a) extension and advisory services are not only for purposes of creating awareness but securing enhanced participation and mobilization of farmer groups for effective and efficient implementation of sustainable agriculture practices; and, (b) the use of ICTs has tremendous potential to unlock major bottlenecks related to contemporary changes such as climate change and associated risks in farming systems.

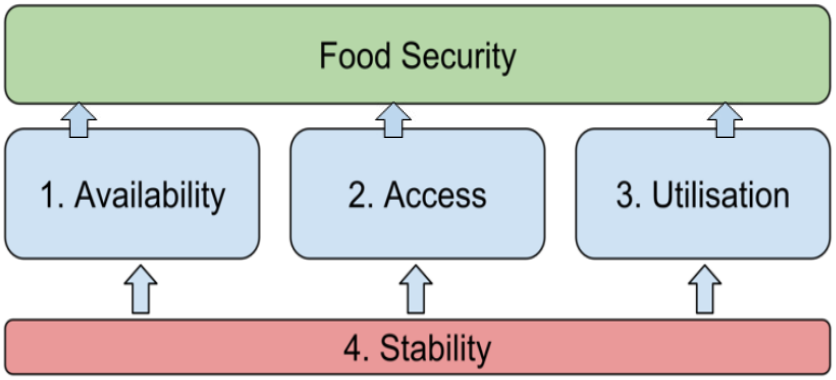

Figure 1. Schematic diagram of the four dimensions of food and nutrition security (adopted from CFS, 2011)

Table 1. Opportunities for research for development interventions to enhance food and nutritional security

Area of opportunity	Potential improvements	Dimensions of food and nutrition security likely to improve
Potential of local food systems	• Improved food production • Improved food production diversity and dietary diversity • Improved farm income	• Food availability • Food utilization • Food accessibility
Potential of local breeds of livestock	• Improved livestock production, conducive to improved food supply and income • Improved production of vegetables, fruit, and nuts	• Food availability and accessibility • Food availability
Potential for vegetables, fruit, nuts, and tea	• Improved production diversity • Improved farm income • Improved watershed and spring-shed management and improved use of water from springs, snowmelt, and glaciers	• Food utilization • Food accessibility • Food availability
Potential for efficient use of natural resources	• Improved rangeland management • Improved production of non-timber forest products (NTFPs), conducive to improved income	• Food availability • Food accessibility
Non-farm income opportunities: tourism, handicrafts, and others	• Improved income • Improved income and purchasing power for diverse food items	• Food accessibility • Food accessibility and utilization
Productive use of remittances	• Improved livelihoods • Improved adaptive capacity to climate change	• Food availability and health status • Food availability
Prospects for regional connectivity	• Improved food trade	• Food availability

Natural resources management, Biotic and Abiotic factors. There are various definitions of the phrase "Natural Resource Management (NRM)" except the consensus is in the fact that it entails the stewardship of natural resources such as land, water, soils, plants and animals with a particular focus on how the deployed actions affect the quality of life for both present and future generations. In the realm of NRM, water use efficiency and fertilizer applications in farming systems in Africa are topical issues that have constituted several research for development efforts in integrated agricultural research for development (IAR4D). Both water and fertilizer use have significant impacts on agricultural productivity as well as on environmental and sustainable ecological systems management. This is an extremely diverse domain in terms of research for development (R4D); and knowledge, innovations and inventions addressing the interface of natural resource use for enhanced crops and livestock productivity are needed to accelerate the attainment of global targets outlined in the Sustainable Development Goals (SDGs).

Similarly, technological innovations are urgently needed to address emerging and re-emerging abiotic and biotic stresses in farming systems. There is evidence (Fischer *et al.,* 2011) pointing to the fact that for key agricultural commodities (e.g., cereals) there has been stagnant productivity rates and the key concern has been that of whether this stagnation implies that yields have reached a technological plateau or are there still large unexploited sources of yield gains either on the shelf or in the research pipeline. Generating new knowledge and innovations on aspects of optimum water requirements in agriculture production, fertilizer use and other approaches to secure increased productivity such as harvesting methods and feed utilization efficiency in livestock as highlighted in a couple of papers (Abedalla *et al.,* 2018; Chemutai *et al.,* 2018; Egeru *et al.,* 2018; Esalm *et al.,* 2018; Kiyimba and Kugonza, 2018; Ngala *et al.,* 2018) in this Issues is very critical.

Fischer *et al.* (2011) expressed optimism that in the short to medium term, many newer technologies that are in their early stages of adoption promise a win-win combination of managing biotic and abiotic stress to enhance agricultural productivity while managing natural resources sustainably. These newer technologies include genetic modification technology revolution and the information and communications technologies for efficient and precise management of inputs. Both technologies are still at early adoption phases in the research for development continuum. Hopefully the Malthusian theory and its prognostications (Malthus, 1798) made around the time of the industrial revolution about impending food crises that would take place because of population explosion and staved off because of technological revolution will not become manifest.

Circular economy

The phrase "circular economy" often simply referred to as "circularity" is used to mean an economic system aimed at minimizing waste and making the most of resources (Weetman, 2016). Waste management is a big challenge in Africa and the farming systems / agricultural production systems are a key contributor to this challenge. For instance, weeds extracted from the farming systems including from water bodies such as the water hyacinth (*Eichhornia crassipes*) have potential to become a nuisance in the environment. The article in this volume by Edimu *et al.* (2018) demonstrates a value-add in which the successfully extracted water weed from the lakes can be used to generate energy. This value-add could potentially be extrapolated to several other wastes from farming systems, thereby minimizing wastes and making the most of resources in line with the philosophy of "circular economy". Turning farming systems

wastes into energy is a good contribution towards overcoming environmental pollution. Except in this case the business innovation for scaling up would probably imply farming the otherwise invasive species such as the water hyacinth. Thus, the need for further investigations on the most appropriate farming systems waste materials for energy conversion.

CONCLUSION AND RECOMMENDATIONS

Arguably, more research for development efforts have focused on increased agricultural productivity with a view to develop knowledge and innovations for increased food availability. This skewed effort in favour of food availability can only be realized if the other dimensions of access to food, food use and utilization and food stability are equally addressed. Several scholarly publications and peer-reviewed journals publish articles that are disciplinary specific; and, there is need for more integration across disciplines especially since developing innovations that will sustain rural development efforts necessitates a multi-disciplinary approach. Peer-reviewed journals such as the AJRD with a multidisciplinary scope provide opportunity for scholars and development actors to appraise research that cuts across disciplines and seek its application in various aspects of rural development and its ramifications.

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