

# Preface

The Green Revolution of the 1960s and 1970s in South Asia and elsewhere did not happen in Sub-Saharan Africa (SSA). Indeed, agriculture in SSA either stagnated or regressed during the second half of the twentieth century and has lagged behind that of Asia and other parts of the developing world. Yet, a large part of the population of SSA is dependent on agriculture. It underpins the livelihoods of ~70 % of Africa's poor and under-privileged population. Agriculture in SSA is characterized by small farms of less than two 2 ha and subsistence farming which is typically characterized by the use of hand tools and manual labor and the absence of other inputs, including agrochemicals and irrigation.

That said, several regions of SSA have experienced substantial improvements in crop yields and growth in agricultural production since the beginning of the twenty-first century. Yet, no drastic increase in per capita food grain production has occurred, primarily because of rapid rates of population growth. And per capita food production has decreased in East Africa, Southern Africa and Central Africa. Thus, hunger, malnutrition and poverty remain endemic throughout SSA. Agriculture in SSA is vulnerable to harsh and uncertain climate variations. Resource-poor and small landholders are particularly susceptible to their negative impacts. SSA is one of the global hotspots for adverse effects of climate change on agricultural production and the environment. These include severe problems of soil degradation, nutrient and organic matter depletion, water contamination and eutrophication, and loss of biodiversity, especially the below-ground's diversity.

Despite encouraging signs of agronomic yield increases since 2000, major challenges remain in bringing about substantial agricultural improvements throughout SSA. Therefore, the strategy is to improve agricultural production while minimizing negative externalities and improving the environment.

It is in this context that sustainable intensification (SI) can play an important role in enhancing agricultural production while restoring degraded/desertified soils, mitigating global warming by sequestering atmospheric CO<sub>2</sub> in soils and vegetation (forests), adapting to climate change by using recommended management practices of the so-called climate-resilient or climate-strategic agriculture, improving farm

income, and empowering women and other under-privileged populations. SI is defined as the process of producing more from less while reducing negative externalities and restoring quality of soil and water resources.

An international conference that addressed SI as it relates to climate change and increased food security was held at the Sokoine University of Agriculture (SUA), Morogoro, Tanzania, from 13 to 15 November 2013. Major objectives of the conference were to describe the importance of SI in restoring soil quality and its organic carbon pool as a tool to off-set anthropogenic emissions; to deliberate the role of economic, social (gender), policy and cultural factors in adoption of RMPs by small landholders of SSA; and to identify priority research, development and training priorities that will facilitate SI in SSA.

This 32-chapter volume represents the core of several oral and poster presentations made at the conference. In addition to Introduction and Conclusion sections, the book is thematically divided into seven sections, namely, (1) Land Use and Farming Systems, (2) Effects of Climate Change on Crop Yield, (3) Soil Nutrient and Water Management for Carbon Sequestration, (4) Rehabilitation of Degraded Lands Through Forestry and Agroforestry, (5) Management of Animal Production for Greenhouse Gas Emissions, (6) Smallholder Adaptation to Climate Change, and (7) Economic, Social and Policy Issues.

The conference was attended by more than 100 participants from SSA countries as well as the USA and Norway. It was organized by a Steering Committee with representatives from SUA, the Ohio State University, and the Norwegian University of Animal and Life Sciences. The conference was funded by NORAD, USAID and SUA. Primary funding for the conference was channeled through several programs at SUA, namely the USAID-funded International Agricultural Research Initiative (iAGRI), the Climate Change Impacts, Adaptation and Mitigation (CCIAM) project, and the Enhancing Pro-poor Innovations in Natural Resources and Agricultural Value-Chains (EPINAV) project. In addition, the conference benefitted from contributions from Africa Rising, the International Food Policy Research Institute (IFPRI), the World Agroforestry Center (ICRAF), and the Carbon Management and Sequestration Center (C-MASC).

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Editors

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