



1. Title

African Eco-efficient Solutions to Food Insecurity and Climate Change

2. Type

Divisional Symposium

3. Organizer(s) & Convener

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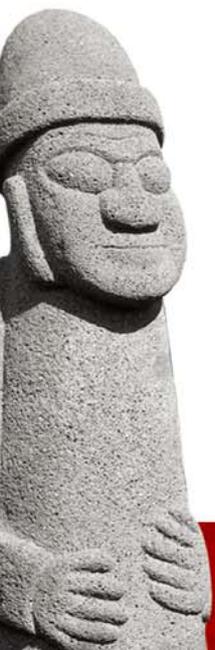
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4. Rationale

Sub-Saharan Africa faces widespread soil degradation and nutrient mining, low soil and water productivity, large yield gaps, rapid population and economic growth, and significant climate change and climate variability impacts. Healthy soils through improved management are needed to enhance crop yields and alleviate the associated impacts of population pressure and climate change. Well-structured and biologically active, or 'healthy', soils are critical for crop productivity, hydrological regulation, ecosystem function, and provision of ecosystem services, all areas essential to achieving increased food security and environmental sustainability, and decreasing rural poverty through increased agricultural productivity. Research that focuses on building soil fertility and





managing landscapes to sustain multiple ecosystem services and that, advance the science of soil and landscape health, ecosystem services, and trade off modeling is thus essential and critical.

5. Objectives

To present eco-efficient African solutions based on a soils research strategy aimed at reversing land degradation, reducing hunger and making agriculture climate smart. The objective is to improve soil health, in terms of biological function as well as water and nutrient supply. Investing in and sustainably managing the soil resource is critical for reducing the effects of rainfall variability on crop yield, for adequate supply of soil nutrients, and for maximizing water infiltration and reducing run-off. The aim is to produce impact by providing spatially explicit and evidenced based soil management recommendations from plot to landscape scales through soil and ecosystem assessment and mapping, extensive gathering and structuring of legacy data, as well as generation of new data through strategic agronomy trials to link plant growth response to soil and climatic properties. The power of these large data sets is only now being achieved, and remains to be demonstrated.

6. Description

This symposium will address solutions to food production constraints, climate change impacts, and soil and land degradation in Africa. Sustainable intensification pathways will address food production constraints with research aimed at closing yield gaps and improving and sustaining soil fertility in important farming systems through adoption of improved soil and water management practices, supported by institutional and policy innovation involving public and private enterprises. Soil science expertise is applied to develop new understanding and methodologies to inform climate change adaptation planning, accelerate adaptation and mitigation efforts, and make them more successful. An ecosystem services lens is used to bring a landscape scale perspective to land degradation problems. Research is aimed at reversing and mitigating land degradation through refocused investment by donors and governments, and adoption of site-specific, equity-sensitive strategies. Clear understanding of land degradation and nutrient mining extents as well as key drivers will enable site-specific and problem oriented eco-efficient management options.

