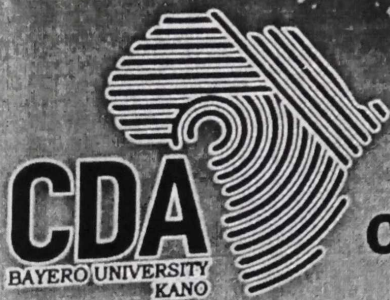


# PROGRAMME OF EVENTS AND BOOK OF ABSTRACT



**Centre for Dryland Agriculture**  
Bayero University, Kano

## 5<sup>th</sup> International Conference on Drylands

### **THEME:**

*Promoting Sustainability and Resilience of Rangelands: Present and Future Outlooks*

**Date:** 6th to 8th May 2025 **Time:** 9:00am Daily

**Venue:** CBN Centre of Excellence Building, Bayero University, Kano.

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Taofik Adam Ibrahim,  
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Building Resilience: Climate  
Change Actions for  
Smallholder Farmers in  
Ethiopia

# Enhancing Nigeria Biogeochemical Capacity to Remediate Climate Change and Attain Food Security

by Muhammed Nurudeen Omeiza | Federal University of Technology, Minna

Abstract ID: 192

Event: 5th International Dryland Conference

Topic: Food and Nutrition Security

Nigeria faces significant challenges in achieving food security and mitigating the adverse effects of climate change. With a rapidly growing population, increasing food demand places immense pressure on the nation's agricultural systems, which are often constrained by poor soil fertility, erratic weather patterns, and unsustainable farming practices. To address these issues, enhancing biogeochemical processes which govern the cycling of essential nutrients and greenhouse gases within the rock-soil-plant-atmosphere system has gained global recognition as a solution to the twin problems of climate change and food security. The concept involves the geoengineering of silicate rocks to facilitate Carbon Dioxide Removal (CDR) directly from the atmosphere while simultaneously enriching soil nutrients. Several studies conducted globally have highlighted the potential of silicate rocks such as basalt, glauconite, olivine, wollastonite, and serpentinite. These rocks are naturally abundant in Nigeria. For instance, basalt is found in the volcanic terrains of the Jos and Biu Plateaus; glauconite, also known as green sand, is located in the upper part of the Gongola Formation in Borno and the Agwu Formation in the Southern Benue Trough; olivine-rich rocks are found in the Zangon-Kataf area of Kaduna and the Jos Plateau; wollastonite is found in Kogi and Ogun States; and Serpentinite is found in Kaduna, Kogi, and Ogun States. Findings from these previous works indicate that geoengineering silicate rock weathering can sequester 1-4 tons of CO<sub>2</sub> per hectare annually, depending on the rock type and environmental conditions. Additionally, this process has the potential to enhance soil nutrients by releasing calcium, magnesium, potassium, and silicon, which improve crop yields and soil health. This underscores the need for research into the potential of these rocks to enhance Nigeria's carbon footprint within the global community while simultaneously improving food security.