



Name: Idowu Atoloye, PhD

Title: Assistant Professor of Soil Science

Expertise: Soil Health, Carbon Sequestration, Soil Nutrient Availability, Organic Amendments, and Biochar Applications

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Bio: Dr. Idowu Atoloye is broadly interested in mechanisms governing nutrient cycling, organic matter dynamics, and ecosystem responses to environmental and management changes. Much of my research focuses on the short-term effects of biochar and amendments, as well as their long-term impacts spanning decades, to address fundamental questions about soil health, carbon sequestration, and nutrient availability under diverse management practices. I aim to address critical questions, such as: How do organic amendments and biochar applications impact soil microbial community composition and function across various soil types? What are the long-term effects of compost applications on soil organic matter stabilization and nutrient cycling? How can we develop climate-smart agricultural approaches that enhance both crop productivity and soil health in diverse agroecological systems? I also work on rhizosphere processes, including the characterization of root exudation composition and metabolite adsorption mechanisms in plant-soil systems, utilizing advanced analytical approaches such as rhizosphere-on-a-chip technology and molecular-level compositional analysis. Through this integrative approach, which combines laboratory incubation studies, field trials, and advanced sensor technologies, my research aims to develop sustainable management strategies for modern agricultural systems while advancing our fundamental understanding of below-ground ecological processes.