Dr. Darrell Schulze

Digital Soil Mapping and Delivery of Spatially Explicit Soils Information in Western Kenya

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ABSTRACT: Soils are essential for producing food, feed, fiber, and fuel, and they provide essential ecosystem services such as providing clean water and sources of biodiversity. With Africa’s population projected to at least triple by 2100, there will be a tremendous need to produce more food on a finite soil resource base. Our goal is to develop a proof-of-concept for delivering agronomically relevant, location specific information on soil properties, soil management, and cropping practices to agricultural extension advisors in western Kenya. To do so, we first develop a digital soil map using a knowledge-based, digital soil mapping approach that relies on earlier soil maps and data, terrain attributes calculated from the best available digital elevation models, and ground truth observations made in collaboration with local soil scientists. In collaboration with local experts, we then develop a table of soil properties and management practices specific to each soil type identified, and then deliver that information using a Purdue-developed mobile app.

Dr. Schulze is a professor in the Agronomy Department at Purdue University where he specializes in soil chemistry, mineralogy, and pedology. His current work focuses on visualizing and delivering large amounts of soil spatial information to end users via mobile devices. He has worked in western Kenya since 2003 on various projects that included faculty and student exchanges in collaboration with the College of Agriculture at the University of Eldoret, and with AMPATH, a partnership between Moi University and Moi Teaching and Referral Hospital in Eldoret, Kenya, and a consortium of North American academic health centers led by Indiana University. He has B.S. and M.S. degrees in agronomy and soil science from Texas A&M University, and a Ph.D. in soil science from the Technical University of Munich.