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Making US Soil Taxonomy more scientifically applicable to environmental and food security issues.

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US Department of Agriculture began mapping soils in the 1890s on a county-by-county basis until most of the conterminous United States was mapped by the late 1930s. This first-generation mapping was followed by a second-generation that re-mapped the US beginning in the 1940s. Soil classification during these periods evolved into the current system of Soil Taxonomy which is based on (1) soil features as natural phenomena and on (2) soil properties important for agriculture and other land uses. While this system has enabled communication among soil surveyors, the scientific applicability of Soil Taxonomy to address environmental and food security issues has been under-utilized. In particular, little effort has been exerted to understand how soil taxa interact and function together as larger units—as soil systems. Thus, much soil-geomorphic understanding that could be applied to process-based modeling remains unexploited. The challenge for soil taxonomists in the United States and elsewhere is to expand their expertise and work with modelers to explore how soil taxa are linked to each other, how they influence water, nutrient, and pollutant flow through the landscape, how they interact with ecology, and how they change with human land use.