# Soil Attributes that Govern Landscape Stability in Tropical Steeplands. (A06-wilding155943-Oral)

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#### Abstract:

Land resources in tropical steeplands are being rapidly deforested. This leads to landscape instability and soil degradation. Landslides are the primary mode of soil erosion on most tropical steeplands, but the degree of risk differs according to landscape position and soil condition. Volcanic soils are much less susceptible to mass movement than Alfisols and Mollisols derived from igneous rocks and limestones. Soils with root and water restrictive subsoils (e.g. argillic, duripan, lithic/paralithic contacts) and high shrink/swell activity are much more vulnerable than soils without these features. Soil thickness, clay content, clay mineralogy, shear strength, soil moisture content, rock content, and slope gradient, interactively with land use, govern landscape stability. Cropped and barren soils are more vulnerable than forested sites. Conservation biophysical buffers (e.g. rockwall terraces, woody legumes, and vetiver grass) are more effective in stabilizing steeplands than surface mulches. Under some steepland conditions, GIS/DEM models serve as a poweful tool to generalize slump propensity hazards and conservation strategies.

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