

COLLABORATIVE EFFORTS TOWARDS UNDERSTANDING THE BIOLOGICAL STRUCTURES AND FUNCTIONS OF SELECTED SOIL GROUPS IN RURAL GHANA, MALAWI AND KENYA. **Senol Yildiz¹, T. Teal², R. Mkandawire^{1,6}, J. van Ravensway³, A. Thuo⁴, C. Kwoseh⁵, T. Adjei-Gyapong⁵, V. Saka⁶, M. Lowole⁶, G.N. Karuku⁴, P.M. Wachira⁴, V.N. Gathaara⁷, J.W. Kimenju⁴, J. Qi³, T. Schmidt², and H. Melakeberhan¹.**

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Degrading health of sub-Saharan African soils is a major impediment to the Millennium Development Goal and the strategy of poverty reduction for Africa through the Comprehensive Africa Agricultural Development Program. Without addressing soil degradations, vital ecosystem services are unlikely to return to nor remain at levels that can sustain viable human populations. Improving ecosystem services and reducing poverty require integrated understanding of the connections among terrestrial agro-ecosystem degradation, habitat and biodiversity loss, lower agricultural yield, food insecurity, and forced population migration. This Howard G. Buffett Foundation-funded and collaborative project among MSU, KNUST, UoN, UoM, and the New Partnership for African Development (NEPAD) Agency is a foundation towards developing scalable soil health management strategy in soil groups. Using nematode assemblage and total microbial analyses as major soil ecosystem change indicators, the objective in this phase of the project is to establish baseline information on biological structure and function of Ferralsols, Lithosols and Nitosols in different regions and production practices of Ghana, Malawi and Kenya. Over 500 soil samples have been collected from disturbed (agricultural) and undisturbed (natural) ecosystems during March and April of 2012. As part of accounting for the role of anthropogenic factors on land use practices, cropping history, land ownership, socioeconomic, and related cultural information were also considered. Field observations suggest large differences in land use within and across regions. Analyses of preliminary data will be presented.

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