

Potential of Developing a Soil Conservation Guiding Tool for Smallholder Farmers across Sub-Saharan Africa: A Proposal for Malawi

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INTRODUCTION

Soil loss remains to be an issue of concern all across the world. Soil loss presents a robust threat to soil quality that eventually affect agricultural systems. In Sub-Saharan Africa where majority of people depends on farming, degradation of land resources presents several challenges. Food insecurity due to decreased farm yield that may lead to increased levels of malnutrition are common impacts on local population in Africa. On the other hand, there might be over use of chemical fertilizers by farmers to increase soil fertility which might affect soil chemistry and further degrade land resources. However, understanding where and the quantities of soils expected to be lost given different management practices is key towards soil conservation. Although there exist tools for simulating soil loss, for instance, the SLEMSA model, USLE and IntErO among others, their complexity makes their usage practically difficult. Consumption of such complex tools in Sub-Saharan Africa by smallholder farmers who are also majority is low due to lower literacy levels despite soil loss being at stake due to common farming activities. Since insights from these models despite their complexity can help to make better choices for soil conservation, it is important to develop tools that can be easily consumed by local smallholder farmers despite their lower literacy levels.

This study proposes of developing simple tool that will make use of publicly available data on elevation, soil types and vegetation cover to make estimates of soil loss given the geographical boundaries of a piece of land.

METHODOLOGY

The proposed tool is targeting to evenly be consumed by average smallholder farmers at community level. The current study will be conducted at the level of Agricultural Extension Planning Area (EPA). An android App that enables creation of a Soil Conservation Plan for a watershed of interest and, calculate and provide soil loss estimates that enable comparison of various management scenarios.

Using participatory approach, the system will be tested with smallholder farmers at EPA level. Individual interviews enriched with focus group discussions with targeted smallholder farmers will be administered to assess the usability, performance and acceptability of the application in Malawi

CURRENT NEEDS

While that this tool has great potential to be used for soil conservation planning across Sub-Saharan African Region and all across the world in supporting implementation of efforts to conserve soil resources, there is a need for the tool to use the best scientific knowledge and technology of the day. Specifically the study team would like to call for collaborators in soil loss modelling, particularly using IntErO, SLEMSA and USLE, Android Application development and prototype testing. Furthermore, the study has no funding and is looking for funding to test the concept and provide to the global community a proof of concept.