

Introduction

Paper maps have nowadays been replaced by digital maps; thanks to the recent technologies called Geographic Information Systems (GIS). Most major agricultural research stations in Tanzania have adopted GIS. TaCRI was late to come on board because, historically, it had never had a cartographic unit. Collaboration with TARI-Mlingano in 2008/09 enabled the establishment of a mini-GIS unit at Lyamungu. Its task was to develop digital maps of the TaCRI Lyamungu estate, some of whose results are discussed in this paper.

Materials/Methods

A non-georeferenced paper map developed in 1934 was scanned, carefully scrutinized and a total of 8 control points selected, whose x-y coordinates were taken with a GPS tool. They were loaded into Excel spreadsheet, properly formatted and saved as a GIS-compatible .csv file. Several empty polygon and line shapefiles were created on ArcCatalog, each digitized onscreen. Soil fertility data (pH, CEC, OC and available P) from 113 georeferenced points within the estate were interpolated in turns using the IDW algorithm and clipped on basis of the boundary shapefile.

Conclusion/Perspectives

This work has formally introduced TaCRI to the GIS world – an important step as GIS is becoming ubiquitous in global research, planning and problem solving. The work has also proved that even the non-georeferenced paper maps in our archives are still useful as long as you can georeference key points with a GPS and have facilities for onscreen digitization.

References:

- Hillier, A. (2011). Manual for working with ArcGIS 10. University of Pennsylvania, School of Design. Selected Works Series. 83pp.
 Kyariga, A.T. (2001). GIS as a decision making support tool for urban planning and management: A practical case of Tanzania. CORP2001, Vienna University of Technology:101-106.

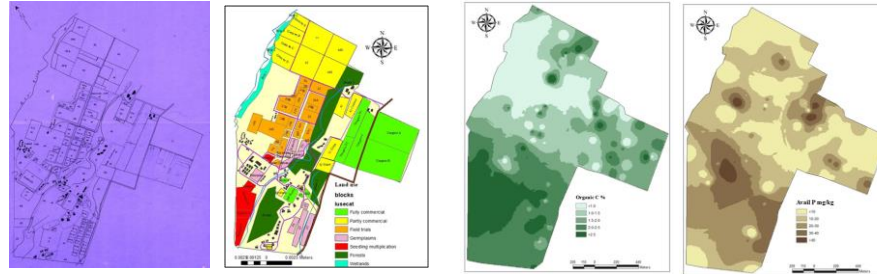


Figure 1: From a paper map to a digital one

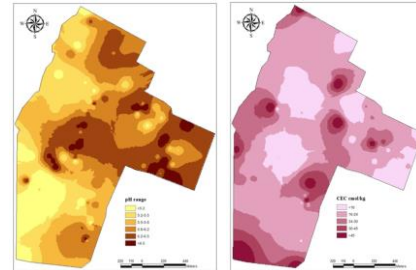


Figure 2: Variation in pH (left), CEC (right)

Figure 3: OC (left) and P (right)

Results/Discussion

The resultant was the first ever digital map of TaCRI Lyamungu estate.

It has five generic shapefile layers - boundary, rivers, roads, settlements and fields, and one specific shapefile “soildata”. Commercial, semi-commercial and trial fields were largest in extent, followed by forests and germplasm collection.

Whereas the map for CEC showed irregular trends, those for pH, OC and available P unveiled interesting ones, including hotspot areas for setting out liming, ISFM and P response trials respectively.