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Topographical Information System: A Case Study of Oyo State College of Agriculture, Igbo- Ora, Ibarapa Central Local Government Area, Oyo State

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Abstract: The project is a topographical information system that was carried out in at detailing the topography, natural and artificial feature of farm lands within the study area. The project is aimed at building up a digital method for accessing topographical data and usage of digital document. This was also carried out to give the management of the college some information such as the area, nature of the terrain. The Geometric data was acquire by using Promark III global positioning system receiver instrument and other survey equipment, these data were downloaded and were used for plotting by using AutoCAD land development 2009, also the digital terrain model was plotted by suffer software. Report of the result was presented a map format.

Keywords: undulation, terrain relief, degradation/deformation, erosion, DGPS, RTK.

I. INTRODUCTION

Topography in a narrow sense involves the recording of relief or terrain, the three [3] dimensional quality of the surface and the identification of specific landforms. This is also known as geomorphometry. In modern usage, this involves generation of elevation data in digital form (DEM). It is often considered to include the graphic representation of the landforms on a map by varieties of techniques, including contour line, hypsometric tints, and relief shading.

In engineering surveying, either or both of the above formats may be utilized in the planning, design and construction of works, both on the surface and underground. At a later stage, surveying techniques are used in the dimensional control or setting out of the designed constructional elements and also in the monitoring of deformation movements.[1],[2]

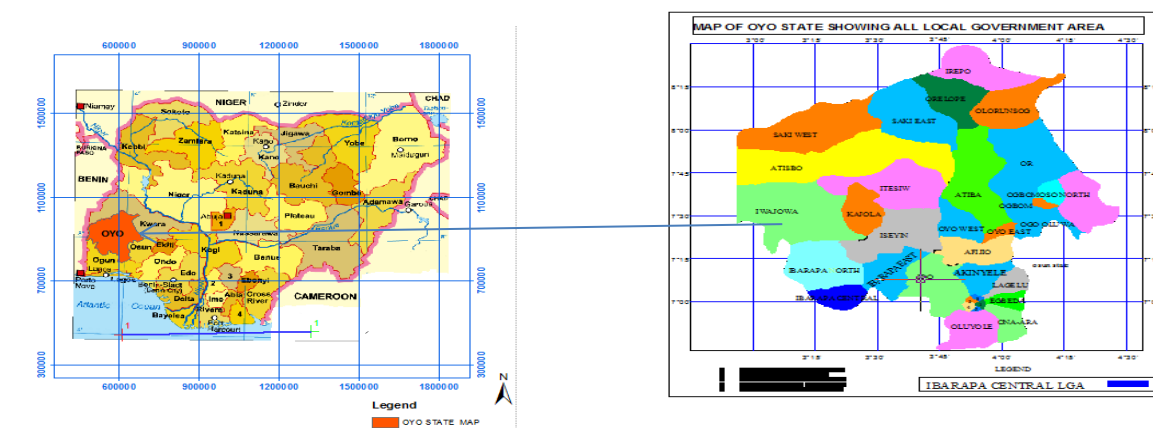
Topographic information is a vital tool to farmers in the planning, and arrangement of the farm settlement. This knowledge, combined with an equal understanding of the limits and capabilities of surveying instrumentation and techniques, will enable the farmer to successfully complete his farm project in the most economical manner and with good increase in yields.

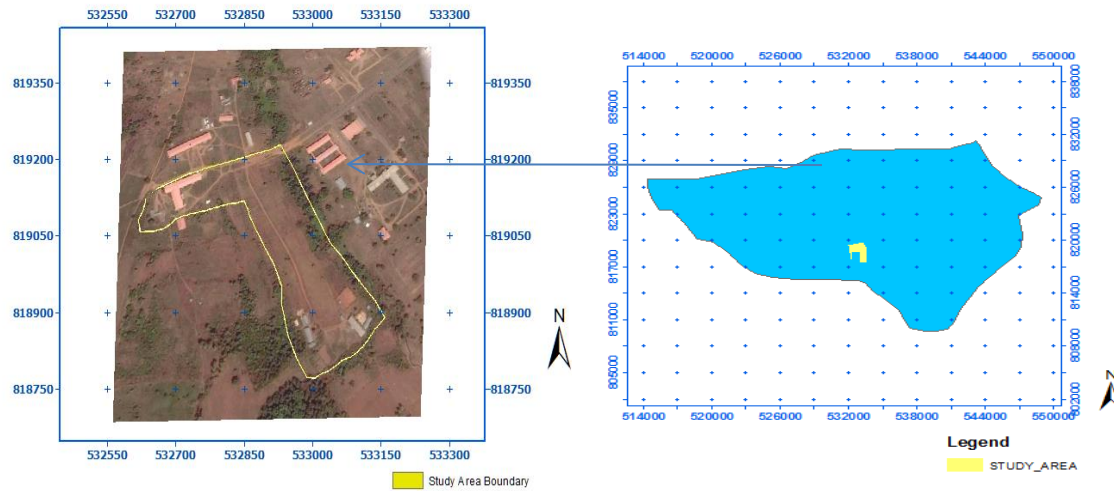
Topographic Information System is very crucial in this present age in other to be able to update maps and retrieve necessary data at any given time with minimal efforts. Topographic Information System can be explained as the combination of human effort and computer-based tools for the collection, storage, analysis, manipulation and retrieval of various kinds of data relating to geographic features (man-made and natural) on the surface of the earth.[4]

II. STUDY AREA

The project site is situated at Oyo state college of Agriculture (Department of Agriculture and its Environment precisely), Ibarapa Central Local Government Area, Igbo-Ora, Oyo State. It is approximately between latitude 07 24' 41'' and 07 24' 32'' and longitude 03 17' 42'' and 03 17' 25'

Figure 1: Map of the Study Area





III. METHODOLOGY

The basic principle upon which all survey works are carried out is virtually the same but different in term of instrument used, the accuracy required, purpose of the map and requirement in the method of observation hence ; Topographical information system is of no exception. Below is the outline of the methodology adopted for this study.

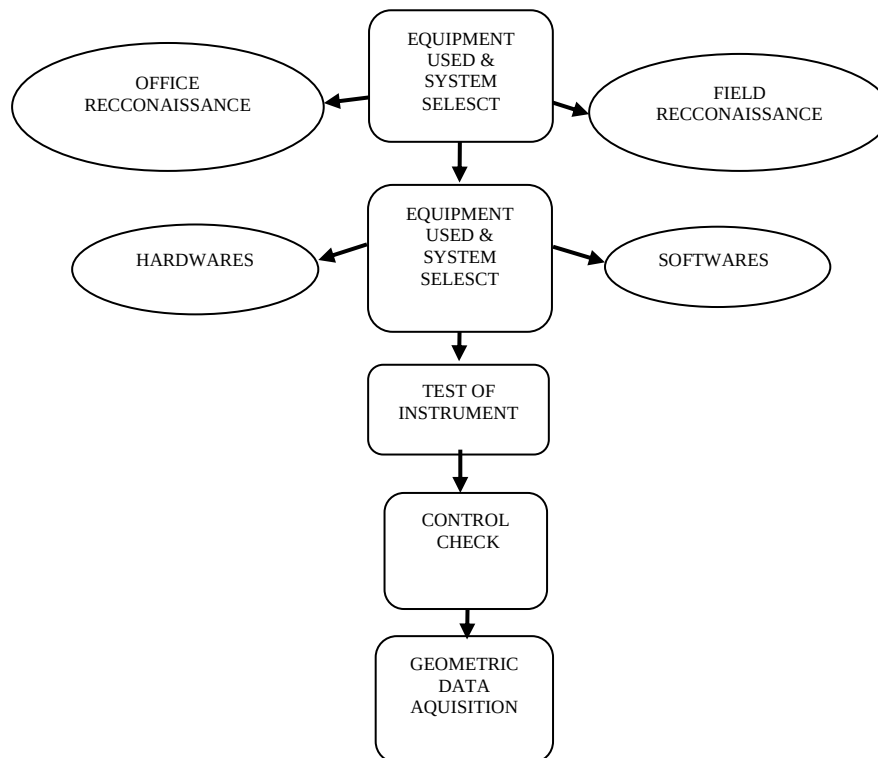


Figure 2: Outline of Methodology

IV. DATA ANALYSIS AND RESULT PRESENTATION

The Data acquired using promark III were downloaded via a connecting cable using the GNSS Solution installed on the computer system. Then, the raw data were re-organized so as to be viewed in the autoCAD land development environment. The arranged data was saved as *CSV file* for plotting in Land development; boundary coordinates were arranged and saved as *BLN file for blanking in surfer* and the topographic data were saved as *DAT file* for plotting contour, spot height and Digital Terrain Model, then the perimeter was plotted by using AutoCAD land development.

V. RESULT PRESENTATION

The result of topographical information system is presented in figure 3 below. The result shows the configuration of the topography of the study area and contour, Spot heighten, Digital terrain model map that give details about the present state of the farm and possible decision in the nearest future.

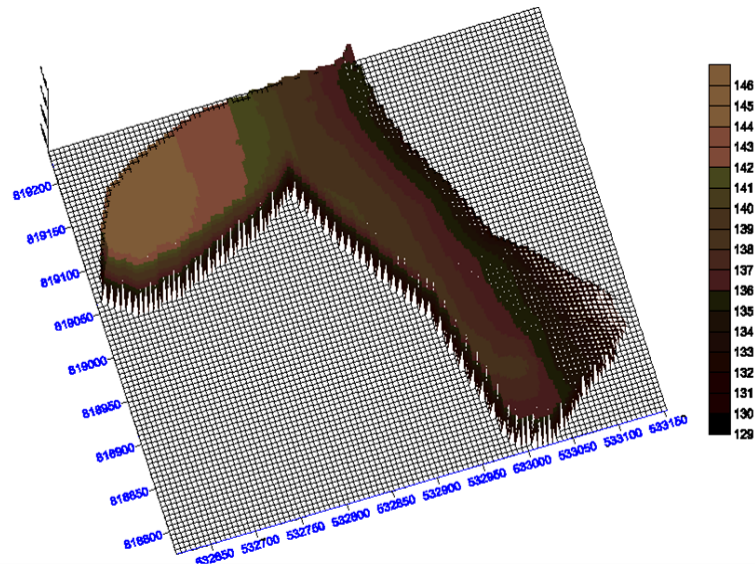


Figure 3: Result of Topographic Information Map of the study Area

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