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Agricultural Land Suitability Analysis of Kampe-Omi Irrigation Scheme Using Remote Sensing and Geographic Information System

Authors : Olalekan Sunday Alabi, Titus Adeyemi Alonge, Olumuyiwa Idowu Ojo

Abstract : Agricultural land suitability analysis and mapping play an imperative role for sustainable utilization of scarce physical land resources. The objective of this study was to prepare spatial database of physical land resources for irrigated agriculture and to assess land suitability for irrigation and developing suitable area map of the study area. The study was conducted at Kampe-Omi irrigation scheme located at Yagba West Local Government Area of Kogi State, Nigeria. Temperature and rainfall data of the study area were collected for 10 consecutive years (2005-2014). Geographic Information System (GIS) techniques were used to develop irrigation land suitability map of the study area. Attribute parameters such as the slope, soil properties, topography of the study area were used for the analysis. The available data were arranged, proximity analysis of Arc-GIS was made, and this resulted into five mapping units. The final agricultural land suitability map of the study area was derived after overlay analysis. Based on soil composition, slope, soil properties and topography, it was concluded that; Kampe-Omi has rich sandy loam soil, which is viable for agricultural purpose, the soil composition is made up of 60% sand and 40% loam. The land-use pattern map of Kampe-Omi has vegetal area and water-bodies covering 55.6% and 19.3% of the total assessed area respectively. The landform of Kampe-Omi is made up of 41.2% lowlands, 37.5% normal lands and 21.3% highlands. Kampe-Omi is adequately suitable for agricultural purpose while an extra of 20.2% of the area is highly suitable for agricultural purpose making 72.6% while 18.7% of the area is slightly suitable.

Keywords : remote sensing, GIS, Kampe–Omi, land suitability, mapping
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