

Abstract

The aim of this study was to develop a suitability model for Green gram production in Kitui County using GIS-based multi-criteria evaluation. Soil and topography were chosen as the main criteria for analysis and 6 sub criteria (soil texture, depth, pH, cation exchange capacity drainage and slope). The criteria were selected based on crop experts' knowledge and available Green gram requirements literature. The criteria maps were reclassified into 4 suitability levels Highly (S1), Moderately (S2), Marginally (S3) and not suitable (N) based on FAO guidelines. The Analytical Hierarchy Process decision making tool was used to determine the perceived weights or influence that each criteria carries. The weights were then used as inputs in the weighted overlay and a suitability map generated. Based on the findings all land is suitable for Green gram production with varying degrees of suitability where 32.7%, 23.7% and 43.6% as highly, moderately and marginally suitable respectively. Major limitations that prevent land from being highly suitable include acidity, alkalinity and poor drainage in soils and in some cases steep slopes.