Abstract

In the year 2002, USAID's FEWSNET programme started warning about a looming food crisis in Bugesera region of the Eastern Province of Rwanda, which would be exacerbated by water scarcity. This study attempted to map potential irrigable lands of that agro ecological zone using spatial information to determine the most suitable areas that can be included in the national development agenda. The methodology consisted of overlaying different irrigation parameters derived from the processing of the Landsat Aster 2006 radar image and Digital Elevation Models (DEM) using appropriate software packages, namely ILWIS 3.3, ERDAS Imagine 8.7 and ArcGIS 9.2. These tools enabled us determine Land use and Land cover classification of the study area that fits to the soil characteristics, geology, topography and hydrology of Bugesera highlands. Maps resulting from this overlaying process display different types of layer classes according to each irrigation purpose. In most of the cases, only two classes of slope gradients, the soil texture, water proximity, and Land use/ cover type were found to be the most economic and sui table for irrigation purpose in Bugesera region, owing to their high water holding capacity. These were related to surface irrigation and all other possible types of irrigation, mainly sprinkler and drip irrigation. Overlaying these spatial models is an new way of thinking for irrigation development and agricultural water optimization in the Eastern Region of Rwanda in general and Bugesera region in particular