SUFIG-WilKom: A GIS-Based User Friendly System for Land Suitability Assessment in South Sulawesi, Indonesia

Sumbangan Baja¹, Samsu Arif², Risma Neswati¹

¹Department of Soil Science, Hasanuddin University Makassar; ph (+fax) +62-411-587076 (corresponding author, email: sbja02@yahoo.com.au), neswati76@gmail.com;
²Department of Physics, Hasanuddin University, Makassar, South Sulawesi, Indonesia Phone +62-411 586016, Fax +62-411 586588, email: samsu_arif@yahoo.co.id

Abstract

During the last decade, Indonesian government has implemented food security program with the main purpose of achieving food sufficiency at a national level. The main purpose of this project is to develop a GIS-based user friendly system for assessing land suitability for eight types of food crops. Three steeps of procedure were implemented. First is to conduct soil survey based on generated land mapping units (LMUs). Second is to develop soil database in GIS, and third is to develop a user friendly system called SUFIG-Wilkom. The system consists of four main components: land characteristics, land suitability, validation test, and improvement needed. The main sources of database used include digital topographic map, soil map and soil characteristics derived from available data, soil survey at reconnaissance level, as well as climate data. Other GIS data layers include administration boundary and land use map. The system implements land suitability evaluation method based on the spatial-qualitative query approaches in GIS using the FAO Framework for Land Evaluation. Validation test is made by direct calculation of crop yield during harvesting period. Output of the system is a decision support tool that can give decision makers and land managers information interactively, such as land suitability classes, limiting factors, and improvement needed either at LMUs or at subdistrict subdivisions. SUFIG-Wilkom is also amenable to various operations in a vector GIS, so that the system may accommodate possible additional assessment of other crop types.

Keywords: GIS, SUFIG-WILKOM, land suitability, foodcrop, decision tool