



Tropentag, October 5-7, 2011, Bonn

“Development on the margin”

Building Geoprocessing Models for Land Suitability Assessment for “Thanh Tra” Pomelo in Central-Vietnam

NGUYEN TIEN LONG, MICHAEL BÖHME

Humboldt Universität zu Berlin, Department of Horticultural Plant Systems, Germany

Abstract

A land suitability assessment study for “Thanh Tra” pomelo production in Central Vietnam was carried out in the Nam Dong district, Thua Thien Hue province. GIS technique was applied following the framework for land evaluation (FAO, 1976) in order to facilitate the spatial analysis to achieve an optimum utilisation of the available land resources for the sustainable pomelo production. The multi-criteria evaluation method was used based on the climatic and terrain data as well as soil properties. The minimum area of evaluation was a pixel with the resolution of 30×30 m. Eight parameters for crop suitability and five parameters for environmental suitability were considered and the suitability analysis was carried out by fuzzy membership classification. In addition, this study also incorporated farmers’ perceptions as well as their preferences into the decision making process by using analytic hierarchy process (AHP). Geoprocessing models were built using Model Builder Extension in ArcGIS to execute the sequence command to generate a physical suitability index map for “Thanh Tra” pomelo in the study area.

The physical suitability of “Thanh Tra” pomelo map showed that there were no highly suitable areas. The highest suitability percentage belonged to marginally suitable that accounted 11,057 ha or for 53.30 %, followed by moderately suitable with an area of 9,619 ha or 46.37 %, while the non-suitable area accounted only 70 ha or 0.34 %. The results of this study can be used as recommendation for the farmers and responsible administrators in the region in order to change the cropping patterns for pomelo orchards, for higher productivity and less negative impact on the environment.

Keywords: Geoprocessing models, GIS, land suitability assessment, multi-criteria analysis, “Thanh Tra” pomelo