

基于GIS和多目标评价方法的果树适宜性评价

Fruit tree suitability assessment using GIS and multi-criteria evaluation

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英文关键词: fruit tree suitability evaluation; multi-criteria evaluation; Digital Elevation Model; GIS

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中文摘要:

漳州地区是福建省乃至全国有名的水果之乡,地貌复杂,自然资源与生态环境差异显著。为了科学合理地利用自然资源,对该地区进行果树适宜性综合评价,分析其种植现状与利用潜力,提供科学决策依据。首先建立研究区域内土壤、气候与地形等数据库,并利用地形对气候分布状况进行校正,同时通过Landsat TM遥感影像的分析解译得到研究区域内的土地利用现状分布图和主要果树种植分布图,在此基础上采用GIS和多目标评价(MCE)方法对漳州地区三种主要果树(香蕉、荔枝和龙眼)进行适宜性评价,最后综合分析这些果树适宜分布现状与利用潜力。研究表明,漳州地区大部分区域都非常适宜种植这三种水果,发展水果生产潜力较大。

英文摘要:

The application of a Multi-Criteria Evaluation(MCE) approach to identify suitable areas for the production of banana, lichee and longan in Southeast of Fujian Province in China was presented. Climate, terrain and soil databases were used to integrate GIS coverage. Because of the varied topography of Fujian Province, the yearly average temperature and minimum temperature were modeled through Digital Elevation Model(DEM) for the whole region. The evaluation factors of slope, aspect were derived from DEM through ARCGIS8.3 software. Relevant criteria for this fruit trees and suitability levels were defined. This information was used to obtain the criterion maps, which in turn were used as input into the MCE algorithm. Suitability evaluation result map was produced using weighted linear combination and AHP method programmed by ESRI software Arcobjects and Visual Basic language. Land use/cover map and distribution map of fruit trees of 2001 were gained using ERDAS Image8.5 software by means of a supervised classification from Landsat TM images. These land use/cover and the suitability maps were crossed to identify differences and similarities between the present land-use and the suitable areas for banana, lichee and longan.

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