基于GIS和模糊物元分析法的农用地定级评价研究

Gradation of agricultural land based on GIS and the fuzzy-material analysis method

投稿时间：2003-5-16　　最后修改时间：2004-6-18

稿件编号：20040567

中文关键词：地理信息系统； 模糊物元分析； 农用地； 定级

英文关键词：GIS; fuzzy-material analysis; agricultural land; gradation

基金项目：

作者	单位
聂艳	华中农业大学资源环境学院，武汉 430070
周勇	华中农业大学资源环境学院，武汉 430070
于婧	华中农业大学资源环境学院，武汉 430070
任意	华中农业大学资源环境学院，武汉 430070

中文摘要：

利用Arc/Info GIS和模糊物元分析方法，对江汉平原后湖地区农用地进行了定级评价，从而实现该地区土地资源信息的交流与共享，促进农用地的合理利用与科学管理。采用层次分析法确定样区土地质量影响因素和因子；利用Arc/Info软件矢量化提取相关图层后，对道路、水渠作缓冲区分析和多图层叠加确定评价单元；根据各评价因子的隶属函数，应用模糊物元分析法求出定级因子的权重和各评价单元的关联度；根据总分值频率直方图划分农用地级别，并实现定级结果图的自动输出。定级结果表明：江汉平原后湖地区农用地质量中等偏上，一到四级地分别占9.67%，43.15%，33.53%，14.19%，该评价结果基本与实际情况相符；另外，利用GIS和模糊物元分析法能快速准确地获取评价数据和确定评价单元，提高了农用地评价结果的准确性和可信度。

英文摘要：

The gradation of agricultural land is carried out in the Houhu farm land of Jianghan Plain based on Arc/Info GIS and the fuzzy-material analysis method. It is necessary to share agricultural land information over the world and promote reasonable utilization and scientific management of agricultural land resources. First, the factors affecting agricultural land quality are decided by AHP methods. The gradation is obtained using Arc/Info and the evaluation unit are decided through buffer area analysis of traffic and penstock and multi-layers overlapping. According to subject function of evaluation factors, the weights of assessment factors and the correlation degree of evaluation units are calculated by applying the fuzzy-material analysis method. Finally, agricultural land levels are divided according to frequency distribution of synthetic index values of assessment units. With Arc/Info, the map and dataset of grading result in the Houhu farm land are obtained automatically. Grading results indicate that the quality in this area is in medium and high side, the percentages of area in level 1,2,3,4 auount for 9.67%, 43.15%, 33.53% and 14.19% respectively. It is in accord with the local situation. So, by using GIS and the fuzzy-material analysis method, it is reliable and easy to obtain evaluation units and datasets, and the accuracy and reliability of agricultural land evaluation results can be improved largely too.

查看全文　　关闭　　下载PDF阅读器

本系统由北京勤云科技发展有限公司设计