

余 健,房 莉,仓定帮,朱 琳,卞正富.熵权模糊物元模型在土地生态安全评价中的应用[J].农业工程学报,2012,28(5):260-266

### 熵权模糊物元模型在土地生态安全评价中的应用

#### Evaluation of land eco-security in Wanjiang district base on entropy weight and matter element model

投稿时间: 2011-05-27 最后修改时间: 2012-02-10

中文关键词: [生态](#),[模型](#),[数学方法](#),[生态安全](#),[熵权](#),[物元分析](#)

英文关键词: [ecology models](#) [mathematical techniques](#) [eco-security](#) [entropy weight](#) [matter element analysis](#)

基金项目:安徽师范大学科研培育基金资助(2010xmpy015)

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中文摘要:

针对目前生态安全评价中信息屏蔽和主观性问题, 该文运用物元分析法和熵权法对皖江地区马鞍山、合肥、芜湖等9个市土地生态安全水平进行评价, 并与多指标综合评价法进行比较。熵权物元分析法包括构建评价指标体系、评价指标经典域、节域, 建立土地生态安全评价物元模型, 计算评价指标关联度, 确定指标权重等内容。研究表明: 马鞍山的土地生态安全级别为“较不安全”, 池州、安庆、的土地生态安全级别向“较不安全”级转化, 巢湖、芜湖、铜陵的土地安全级别向“较安全”转化, 宣城、合肥、滁州的土地安全级别为“理想安全”, 与多指标综合评价结果基本一致。物元分析单指标评价结果表明: 皖江地区土地生态安全主要影响因子是单位面积耕地农药负荷、单位GDP二氧化硫排放量、人均水资源量、人口密度、森林覆盖率、大于25°坡耕地面积比例及工业废气处理率等。多指标综合评价能得到综合质量信息, 而物元模型既能得到综合质量信息, 也能反映评价对象的稳定状态, 同时可以揭示评价对象单个评价指标的分异。研究表明熵权物元分析法在土地生态安全评价具有一定应用价值。

英文摘要:

Focusing on the problems of method disunity, information shield and subjectivity of the evaluation of land eco-security in China, this paper evaluated land eco-security of Ma' anshan, Hefei, Wuhu, Xuancheng, Anqing, Chuzhou, Chizhou, Chaohu and Tongling nine cities in Wanjiang district with the theory of entropy weight and matter element model, and the results were compared with that by comprehensive evaluation method. The entropy weight method includes following steps: building system of assessing factors, setting up field of the factors for classifying eco-security, constructing model of entropy and matter element analysis, calculating relevancy between the factor and land eco-security, making out the weight of every factors. The result showed that the land eco-security of Ma' anshan was more dangerous, followed by Chizhou, Anqing. Xuancheng, Hefei and Chuzhou were safe. The grade of Wuhu, Chaohu and Tongling were of a safer trend, which was consistent with the result of comprehensive assessment. The main factors of land eco-security in Wanjiang district included pesticide capacity per-unit area, amount of SO<sub>2</sub> per GDP, water resource capacity per capita, density of people, forest coverage ratio, proportion of arable land area over 25 slope, and ratio of worked exhaust gas and so on. The information of comprehensive quality can be obtained by method of comprehensive assessment, while by method of matter element model, the discrete information of single factor and the steady status can be described in addition to the comprehensive quality. Therefore, matter-element model is valuable in land eco-security assessment.

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