

## 基于GIS的退耕还草专家系统的研制与开发

### GIS-based decision support system of returning cultivated lands into grasslands

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英文关键词: GIS; forage selection decision support system; forage adaptability model; analytic hierarchy process; fuzzy logic reasoning

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中文摘要:

适宜草种的选择在退耕还草决策中起着重要作用, 依据牧草生物学特性和牧草与诸气象因子之间的关系确定牧草的适宜分布区能够为退耕还草工作提供决策支持。该研究利用地理信息系统(Geographic Information System, GIS)和牧草生长适宜度模型相结合, 采用模糊逻辑推理机制开发了退耕还草决策支持系统, 用户可以查询到甘肃省任意一点的气象信息、土壤信息和草原类型, 咨询到适宜种植的牧草品种及其栽培管理技术, 系统还将22种牧草的适应性分布成图。样本运行结果表明, 系统具有较好的决策功能, 可以为甘肃省的退耕还草工作提供决策支持。

英文摘要:

Forage species selection plays a prominent role in the process of returning cultivated lands back into grasslands, and determination of adaptive distributing range for forage species according to their biological characteristics together with their surroundings provides basis for decision support for the work. Therefore, this study aims to develop a GIS-based decision support system to help managers to make decision on how to deal with the returned cultivated lands. Combining GIS and forage adaptability model into the system, fuzzy logic was used in the reasoning mechanism. Users can get climate data, soil information and grassland class, and refer the adaptive forage species and their planting and managing technology for the target site as well. In addition, the system also provides adaptability distributing map of 22 forage species. The results show that the decision support system is very helpful for the related manager due to its good decision making ability.

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