

## 甘南草地地上生物量的高光谱遥感估算研究

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### 摘要:

为了促进高光谱分辨率遥感技术在草地畜牧业动态监测和遥感估产中的应用, 选择甘南草原为研究区, 通过野外观测, 测量了天然牧草的冠层高光谱和地上生物量数据, 分析了4种主要草地类型的冠层光谱曲线特征, 并分析了地上鲜生物量与冠层反射光谱和一阶微分光谱之间的相关关系, 构建了光谱特征参数作为变量, 建立了甘南草原牧草地上鲜生物量的高光谱估算模型, 并对模型进行检验, 结果表明: 特征参数D723的对数回归模型, 不仅相关系数较高, 而且均方根和相对误差都较小, 因此, 估算精度较高, 可作为甘南草地上鲜生物量的最佳高光谱估算模型。

关键词: 牧草; 地上生物量; 高光谱遥感; 估算模型; 甘南草原

## Hyperspectral remote sensing estimation models for aboveground fresh biomass in Gannan grassland

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### Abstract:

In order to promote the application of hyperspectral remote sensing in the dynamic monitoring and yield estimation of grassland, the canopy spectral reflectance and the aboveground fresh biomass corresponding to the spectra of natural grassland were measured in Gannan grassland. This paper analyzed the spectral reflectance characteristics of four main grassland types, the correlation between the aboveground fresh biomass and reflective spectrum, and the correlation between aboveground fresh biomass and the first derivative spectrum. Using characteristic bands and their combination that were strongly correlated to the aboveground fresh biomass, this paper defined hyperspectral parameters as variables. Thus, the hyperspectral remote sensing estimation models of the grass aboveground fresh biomass were established in Gannan prairie. The estimation models were tested by the experiment data. The results showed that estimation model of D723 [ $y=3.526 \ln D723+18.923$ ] was the best, and it's RMSE, relative error, and the correlation coefficient between the estimated value and measured value were 0.208 3, 8.8% and 0.896, Therefore, the model could preferably estimate the grass aboveground fresh biomass in Gannan prairie.

Keywords: grassland aboveground fresh biomass hyperspectral remote sensing estimation model Gannan

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