

技术应用

琯溪蜜柚叶片氮浓度高光谱遥感监测初探

朱晓铃, 黄正清, 高建阳, 黄德华

福建省地质遥感中心,福州350011

摘要:

以福建省平和县琯溪蜜柚为研究对象,利用星载Hyperion高光谱遥感数据对蜜柚叶片进行氮浓度估测。在分析Hyperion数据特征的基础上进行大气校正、几何纠正等预处理,从而得到图像反射率;结合地面光谱测量和蜜柚叶片采样分析,通过逐步回归分析法研究叶片氮浓度与高光谱图像反射率及其衍生量的关系,最终建立其遥感定量监测模型。结果表明,图像反射率的对数变换更有利于氮浓度的定量反演,入选的波段是983 nm、1 245 nm、1 316 nm和1 457 nm,其中1 245 nm波段对氮浓度影响最大,1 457 nm波段最小。利用该模型对氮浓度进行估算的值域与地面调查结果一致,说明利用高光谱进行氮浓度定量反演具有一定的可行性。

关键词: 高光谱遥感 琯溪蜜柚 氮浓度 逐步回归

A PRELIMINARY STUDY OF HYPERSPECTRAL REMOTE SENSING MODEL FOR ESTIMATION OF NITROGEN CONCENTRATION IN POMELO FROM GUANXI

ZHU Xiao-Ling, HUANG Zheng-Qing, GAO Jian-Yang, HUANG De-Hua

Geological Remote Sensing Center, Fuzhou 350011, China

Abstract:

EO-1 Hyperion data is used to estimate nitrogen concentration of Guanxi pomelo in this study. Based on analyzing the data characteristics, the Hyperion preprocessing includes such means as atmospheric correction and geometric correction. Using the linear stepwise regression method, this paper established the correlation between the reflectance spectra / derivative spectra and the concentration of nitrogen on the basis of the sampling data in the field. The results show that reflectance spectra derivative of logarithm is fairly good in estimating nitrogen concentration. The absorption features around 1 003 nm, 1 245 nm, 1 336 nm and 2 264 nm are selected. The values of nitrogen concentration through estimation are quite consistent with those of field measurements. The authors have thus concluded that it is feasible and time-saving to estimate nitrogen concentration of pomelo by using hyperspectral remote sensing images.

Keywords: Hyperspectral remote sensing Guanxi-pomelo Nitrogen concentration Stepwise regression

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通讯作者: 朱晓铃(1979-),女,硕士,主要从事环境与资源遥感的研究。

作者简介:

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