技术方法

水稻叶片不同光谱形式反演叶绿素含量的对比分析研究

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摘要：

通过对常优1号和武粳15两个品种水稻叶片的反射率R、lg(1/R)、反射率一阶微分（FD）和反射率归一化（BN）等光谱形式的测量和计算，分析了叶片光谱不同变化形式与叶绿素含量的相关关系，建立了统计方程，并进行了比较与评价，同时，对反演方程的最佳波段选择进行了探讨。结果表明，叶绿素含量与反射率一阶微分光谱方程的相关性最强，而采用lg(1/R)的光谱形式能够提高遥感反演叶绿素含量的效果。经验证，两个水稻品种叶绿素含量的模拟值与实测值的复相关系数R2分别达到0.641和0.818。

关键词： 水稻叶片　高光谱遥感　叶绿素含量　回归分析

A COMPARATIVE STUDY OF RICE LEAF CHLOROPHYLL CONTENT RETRIEVAL BY MEANS OF DIFFERENT SPECTRAL PERFORMANCES

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Abstract:

The leaf reflectance spectra (R), lg(1/R), standard first derivative reflectance spectra (FD) and absorption band depths following the continuum removal and normalization (BN) of Changyou 1 and Wujing 15 were measured and calculated. The relationship between different spectral performances and rice leaf chlorophyll contents was analyzed. Then the statistic equations between leaf chlorophyll contents and different spectral performances were established, and a comparison was made between them. The best estimator selection was also discussed. The results show that the correlation obtained by the equation established from FD is the best, and the lg (1/R) spectra can improve the retrieval of chlorophyll contents with remote sensing. The multiple correlation coefficients (R2) between estimated and observed rice leaf chlorophyll contents of the two varieties were 0.641 and 0.818 respectively.

Keywords: Rice leaf　Hyperspectral remote sensing　Chlorophyll content　Regression analysis

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