



基于不同植被指数的棉花光合有效辐射吸收分量估算研究

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Estimating Cotton FPAR Based on the Different Vegetation Indexes

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摘要

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摘要 通过开展小区棉花密度和水分对比试验, 分析不同密度和水分处理的棉花整个生育期光合有效辐射吸收分量(FPAR)与光谱反射率的相关关系, 建立棉花FPAR光谱估算模型。结果表明, 棉花FPAR与选取的所有植被指数均呈极显著相关, 其中绿度植被指数(GREENNDVI)和反射率比值(GMI)与FPAR的相关性最好, 相关系数(r)分别为0.794和0.765。分别用GREENNDVI和GMI建立棉花FPAR的估算模型, 其决定系数(r^2)分别为0.657和0.633, 均方根误差(RMSE)分别为0.089和0.093。研究表明, 利用光谱特征参数可以有效地估算棉花整个生育期的FPAR。

关键词: 棉花 光合有效辐射吸收分量 植被指数 估算模型

Abstract: Two field experiments were conducted with different densities and waters, the relationship was analyzed between spectral reflectance and the fraction absorption of photosynthetically active radiation(FPAR), and the estimating models were established for FPAR in the whole growth stages of cotton. The results indicated that it was significant correlations among the FPAR with all the vegetation indexes, the green normalized difference vegetation index(GREENNDVI) and the reflectance ratio (GMI) was better, their correlations coefficient(r) were 0.794 and 0.765, respectively, the estimated models of FPAR were established, and the determination coefficients(r^2) were 0.657 and 0.633, the root mean square errors(RMSE) were 0.089 and 0.093, respectively. The results suggested that the FPAR can be effectively estimate by spectral parameters during growth stages of cotton.

Keywords: cotton fraction of absorbed photosynthetically active radiation(FPAR) vegetation index estimating models

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