

研究论文

薇甘菊叶片对光反射、透射和利用效率及其与同群落植物之比较研究

王文杰¹ 关宇¹ 祖元刚^{1*} 廖文波² 张衷华¹ 陈华峰¹ 贺海升¹

¹ 东北林业大学森林植物生态学教育部重点实验室, 哈尔滨 150040; ² 中山大学生命科学学院, 广州 510275

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摘要 该文对薇甘菊及其所在群落内19种植物(草本和木本)的叶片透射率、反射率和光合特征指标进行了测定, 结果表明:薇甘菊与其它植物透射和反射图谱的变化趋势都比较相近, 在各个光学特征指标与光合相关指标的相互关系中, 薇甘菊并没有表现出区别于同一群落内其它植物的特征。从平均值来看, 200-800 nm下叶片反射率和透射率由大到小依次为: 薇甘菊>草本植物>木本植物, 薇甘菊各光学植被指标(SR680、SR750和PRI)均低于其它植物的平均值, 但是其光合能力(光利用效率、水分利用效率、电子传递速率和净光合速率)与其它植物接近或稍高。而且, 薇甘菊夏季叶片反射和透射率明显高于冬季, 这有利于散失夏季过多光照和充分利用冬季短缺光照。薇甘菊叶片的上述光学特征, 可能是其生长于其它植物表面强光环境的一种适应性表现, 有利于其在入侵地快速生长。

关键词 薇甘菊 草本植物 木本植物 光合能力 反射率 透射率

Light Reflectance, Transmittance, and Utilization Efficiency of Leaves of *Mikania micrantha* and Interspecies Comparison within the Same Community

Wenjie Wang¹, Yu Guan¹, Yuangang Zu^{1*}, Wenbo Liao², Zhonghua Zhang¹, Huafeng Chen¹, Haisheng He¹

¹Key Laboratory of Forest Plant Ecology of Ministry of Education, Northeast Forestry University, Harbin 150040, China; ²School of Life Sciences, Sun Yat-sen University, Guangzhou 510275, China

Abstract We measured the light transmittance, reflectance and photosynthetic capacity of leaves of *Mikania micrantha* and 19 other species of plants (herbal and woody sp.) in the same community. *M. micrantha* and other plants were similar in transmittance and reflectance spectra and showed no apparent differences in the relation between leaf-optical and photosynthetic-related in the same community. On average, the leaf reflectance and leaf transmittance were higher for this weed than for herbs and then woody species, and the optical vegetation parameters of SR680, SR750 and PRI were lower for *M. micrantha* than for other herbs and woody species. However, the photosynthetic capacity of *M. micrantha* (light use efficiency, photosynthetic water-use efficiency, electron transportation rate and net photosynthetic rate) was close to or somewhat higher than that of other species. Moreover, leaves of *M. micrantha* reflected or transmitted much more light in summer than in winter, which favors the release of redundant light in summer and absorption of more light in winter. These strategies for light utilization by *M. micrantha* adapt to the strong light environment above the vegetation surface (where *M. micrantha* is generally grown), and may favor the rapid invasion of this weed in new habitats.

Keywords *Mikania micrantha* herbs woody plants photosynthetic ability leaf reflectance leaf transmittance

扩展功能

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通讯作者 祖元刚 zygorl@vip.hl.cn