

研究论文

岷江上游干旱河谷四种灌木的抗旱生理动态变化

黎燕琼¹, 刘兴良¹, 郑绍伟¹, 陈泓^{2, 1}, 岳永杰³, 慕长龙^{1,*}, 刘军²

1.四川林业科学研究院, 成都610081 2.四川农业大学林学院园艺学院, 雅安625014
3.北京林业大学水土保持学院, 北京林业大学教育部水土保持重点实验室, 北京100083

收稿日期 2005-12-15 修回日期 2006-9-20 网络版发布日期: 2007-3-25

摘要 岷江上游干旱河谷是我国最困难的造林地区之一。该实验以杂谷脑河干旱河谷区域内, 自然生长的白刺花 (*Sophora davidiana*)、刺旋花 (*Convolvulus tragacanthoides*)、马鞍羊蹄甲 (*Bauhinia faberi var.microphylla*) 和铁杆蒿 (*Artemisia gmelinii*) 为研究材料, 对其抗旱生理及其抗旱性动态进行了分析研究。结果表明: (1) 干旱胁迫下, 灌木体内叶绿素、可溶性糖以及游离脯氨酸含量增加; 同时, 叶片组织失水率、水分亏缺度、细胞膜透性的降低, 以增加灌木的抗旱性。(2)通过隶属(反隶属)函数法对4种灌木抗旱能力动态变化进行综合评价, 几种灌木生长季节的抗旱性综合评价指数7月份为0.507, 最高; 其次9月份>8月份>6月份, 5月份最低, 仅为0.442。这为了解植被在该地区抗旱性动态变化趋势, 以及为在植物抗旱性最弱的生长时期——5、6月份, 采取有效抗旱措施, 提高造林树种的成活率与保存率, 加快该地区植被的恢复与重建进程提供理论依据。

关键词 灌木; 生理动态; 抗旱性; 综合评价

分类号 [Q948](#), [S718](#)

Drought resistant physiological characteristics of 4 shrub species in arid valley of MinJiang River

LI Yan-Qi ong¹, LIU Xing-Li ang¹, ZHENG Shao-Wei¹, CHENG Hong^{2, 1}, YUE Yong-Jie³, MU Chang-Long^{1,*}, LIU Jun²

1 *Sichuan Academy of Forestry, Chengdu, 61008, China*
2 *Forestry and Horticulture college of Sichan Agricultural University, Ya'an, 625014, China*
3 *College of Water and Soil Conservation, BFU; Key Laboratory of Soil and Water Conservation and Combating desertification, Ministry of Education, Beijing 100083, China*

Abstract Due to the fohn, there are 161 km of arid valley (170 km²) in Mingjiang River. The higher evaporation and transpiration (1400-2000 mm annually), lower precipitation (400-700mm annually), steep slope and infertile soils result in a atrocious condition for vegetation in the arid valley. Vegetation is dominated by xerophil shrubs and grasses. However they are playing a significant role in the soil and water conservation in the watershed, and provide important references for "Green for Green" (converting farmland to forest/grass land) campaign in the arid valley as it is very difficult to grow trees. Drought-resistant physiological characteristics of four native species, i.e., *Sophora davidiana*, *Bauhinia faberi var. microphylla*, *Convolvulus tragacanthoides* and *Artemisia gmelini* lochmodophilus have been measured. It was found that The content of Chl, free Pro, soluble sugars increased and evaporation ratio, WSD, RWC and cytolemma osmosis decreased under the drought stress; Integrated assessment on the drought resistant index of four species indicated that the integrated drought resistant index was highest in July (0.507), followed by September, August, June. It was lowest in May (0.442). The result provided a basis for the vegetation restoration especially improving survival of planted species in May and June during which species has weakest drought resistant.

扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [\[PDF全文\]\(562KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“灌木; 生理动态; 抗旱性; 综合评价”的 相关文章](#)
- ▶ [本文作者相关文章](#)

- [黎燕琼](#)
- [刘兴良](#)
- [郑绍伟](#)
- [陈泓](#)
- [岳永杰](#)
- [慕长龙](#)
- [刘军](#)

Key words [shrub](#) _ [physiological characteristics](#) _ [drought-resistance](#) _ [integrated](#) [assessment](#)

DOI

通讯作者 慕长龙 Mucl2006@yahoo.com.cn