生态与农村环境学报
Journal of Ecology and Rural Environment
ISSN 1673-4831
CN 32-1766/X

生态与农村环境学报 » 2012, Vol. 28 » Issue (1) :103-107 DOI:

干旱胁迫对香蒲生长和叶绿素荧光参数的影响

吴晓东, 王国祥, 李振国, 夏劲, 魏宏农, 许宽, 周锋

南京师范大学地理科学学院

Effects of Drought Stress on Growth and Chorophyll Fluorescence Parameters of *Typha orientalis*

WU Xiao-Dong, WANG Guo-Xiang, LI Zhen-Guo, XIA Jin, WEI Hong-Nong, XU Kuan, ZHOU Feng

College of Geographical Science,Nanjing Normal University

摘要 | 参考文献 | 相关文章

Download: PDF (759KB) HTML 1KB Export: BibTeX or EndNote (RIS) Supporting Info

摘要 采用野外调查方法，研究了不同土壤含水量条件下香蒲植株的形态、生物量、叶绿素含量和叶绿素荧光参数的变化。结果表明：（1）土壤含水量对香蒲株高影响显著，轻度、中度和重度干旱处理香蒲株高分别下降为对照（土壤水分始终饱和）的90.90%、68.19%和63.64%。（2）香蒲茎直径、叶长、叶宽和叶绿素含量均随土壤含水量的降低而呈递减趋势，枯叶率却明显增加。（3）不同土壤含水量条件下香蒲密度和生物量差异均达显著水平($P < 0.05$)。轻度、中度和重度干旱组香蒲密度分别比对照下降41.67%、53.33%和66.67%；而对照香蒲单株生物量分别为轻度、中度和重度干旱组的2.25、5.54和7.45倍。（4）香蒲叶片最大光量子产量（F_v/F_m）和最大相对电子传递速率（$R_{e,t,max}$）随土壤含水量的减少而明显降低。干旱降低了香蒲叶片光系统Ⅱ（PSⅡ）的光化学效率，抑制了香蒲的生长。

关键词： 土壤含水量 香蒲 生长 叶绿素荧光参数

Abstract： Field surveys were carried out to explore effects of soil moisture on morphology,biomass,chlorophyll content and chlorophyll fluorescence parameters of *Typha orientalis*.Results show that (1)soil water content significantly affected plant height of *T.orientails*,which was 90.90%,68.19% and 63.64% of that in the control group(soil water saturation),when the plants were exposed to light,moderate and heavy drought stress,respectively;(2)stem diameter,leaf length,leaf width and chlorophyll content in the leaf decreasing soil moisture content,while percentage of withered leaves significantly increased;(3)treatments different in soil moisture content differed sharply($P<0.05$) in density and biomass of *T.orientalis*, and density of the plants decreased by 41.67%,53.33% and 66.67% in the treatment of light,moderate and heavy drought stress,respectively,while biomass of a single plant in the control was 2.25,5.54 and 7.45 times that in the treatment of light,moderate and heavy drought stress,respectively;and (4) the maximum quatum yield of the leaves (F_v/F_m)and maximum electron transport rate ($R_{e,t,max}$)decreased significantly with the decreasing soil moisture content;and drought reduced photochemical efficiency of the PS Ⅱof leaves,thus inhibiting the growth of *T.orientails*.

Keywords： soil moisture content *Typha orientails* growth photosynthetic fluorescence

Received 2011-09-13; published 2012-01-25

Fund:

科技部国际合作重大项目(2010DFB33960)

Corresponding Authors: 王国祥 南京师范大学地理科学学院 Email: wangguoxiang@njnu.edu.cn

About author: 吴晓东（1985-），男，福建宁化人，硕士生，主要方向为水环境生态修复。E-mail:wuxd03@163.com

Service
把本文推荐给朋友
加入我的书架
加入引用管理器
Email Alert
RSS

作者相关文章
吴晓东
王国祥
李振国
夏劲
魏宏农
许宽
周锋

引用本文:

吴晓东, 王国祥, 李振国, 夏劲, 魏宏农, 许宽, 周锋.干旱胁迫对香蒲生长和叶绿素荧光参数的影响[J] 生态与农村环境学报, 2012,V28(1): 103-107

WU Xiao-Dong, WANG Guo-Xiang, LI Zhen-Guo, XIA Jin, WEI Hong-Nong, XU Kuan, ZHOU Feng.Effects of Drought Stress on Growth and Chorophyll Fluorescence Parameters of *Typha orientalis*[J] Journal of Ecology and Rural Environment, 2012,V28(1): 103-107