

植物生产层

水分和磷肥对达乌里胡枝子不同叶位叶绿素荧光参数特征的影响

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摘要:

采用盆栽控制试验,研究了达乌里胡枝子(*Lespedeza davurica*)在3种水分水平[分别为土壤田间持水量的80%(HW)、60%(MW)、40%(LW)]与2种肥料处理(P处理:纯P 0.1 g·kg⁻¹干土;对照:不施肥)下不同叶位叶绿素荧光参数特征。结果表明,P处理中,MW下旗叶F₀和F_v/F_m值显著低于中叶,F_m值差异不显著,说明在轻度水分胁迫下旗叶PS II反应中心受到的损伤较小,虽然旗叶和中叶电子传递没有差异,但旗叶光能转换效率比中叶高。另外,P处理显著降低了达乌里胡枝子叶片NPQ值,同时显著提高了MW下新叶和旗叶F_v/F_m值,说明施用P肥能够有效减少叶片对光能的热耗散,并提高其在一定水分胁迫下的光能利用能力,增强达乌里胡枝子对黄土丘陵区适应能力的。

关键词: 达乌里胡枝子 叶位 叶绿素荧光 水肥

Effects of water and phosphorus on chlorophyll fluorescence characteristics of different position leaves in *Lespedeza daurica*

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Abstract:

A pot experiment was used to determine the Chlorophyll fluorescence characteristics of different position leaves in *Lespedeza daurica* under three different water level (80% FC, 60% FC and 40% FC) and two phosphorus treatments (0.1 Pg·kg⁻¹ dry soil and no P addition). The results of this study showed that the initial fluorescence (F₀) and the maximum photochemical efficiency (F_v/F_m) of flag leaves were significantly lower those of middle leaves under moderate water stress and supply phosphorus, while there were no significant differences in maximal fluorescence (F_m), implying that the PS II reaction center of flag leaves were less destroyed than the middle leaf and the light energy transformation efficiency of flag leaves was higher. The leaf quenching coefficient (NPQ) significantly decreased and the F_v/F_m values of flag leaf and new leaf under moderate water stress condition were significantly higher in supply phosphorus treatment, indicating that the light energy dissipation decreased and light energy transformation increased under water stress by addition of phosphorus, which suggested that the supply phosphorus improved the adaptive capacity of *L. daurica* to semiarid loess hilly gully region.

Keywords: *Lespedeza daurica* leave position chlorophyll fluorescence water and fertilizer

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