

喀斯特地区古茶树幼苗对干旱胁迫的生理响应及其抗旱性综合评价

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The Physiological Responds of Cutting Seedlings of Ancient Tea Plant to Drought Stress and the Comprehensive Evaluation on Their Drought Resistance Capacity in Karst Region

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摘要 以贵州喀斯特地区10个古茶树扦插苗为材料, 采用盆栽控水法研究其对干旱胁迫的生理响应, 并筛选出抗旱的种质资源。试验结果表明, 随着干旱胁迫程度的加重, 10个古茶树扦插苗的相对含水量、 F_v/F_m 、气孔开放率和气孔大小均呈下降趋势, 而相对电导率、丙二醛含量、 H_2O_2 含量与产生速率以及气孔密度呈上升趋势; 从10个古茶树扦插苗中选出1个强抗旱材料, 5个较强抗旱材料。田间持续干旱试验验证了基于生理指标的隶属函数分析对于古茶树扦插苗筛选的准确性及可靠性。

关键词: 茶树 干旱胁迫 生理响应 抗旱性 评价

Abstract: Physiological characteristics of cutting seedlings of ten ancient tea plants from Karst region were investigated under water controlled conditions to unveil the possible mechanisms of cutting seedlings of ancient tea plants in response to drought stress and to screen out the drought resistant germplasms. The results showed that the relative water content, PS II (F_v/F_m), stomatal opening rate, stomatal length and stomatal width were decreased. Meanwhile, the relative conductivity, content of the lipid peroxidation product (Malondialdehyde, MDA), contents of hydrogen peroxide (H_2O_2), superoxide radical () producing rate and stomatal density were increased with the treatment intensity. One strong drought resistance material and five better drought resistance materials were selected from the ten ancient tea cuttings. The one-year field trial proved the subordinate function method based on physiological parameters could be used as a reliable method to screen out the drought-tolerant ancient tea germplasms.

Keywords: tea plant, drought stress, physiological responds, drought resistance, evaluation

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