

不同桃砧木品种对淹水的光合响应及其耐涝性评价

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Evaluation of Peach Rootstock Waterlogging Tolerance Based on the Responses of the Photosynthetic Indexes to Continuous Submergence Stress

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摘要 以10个桃砧木品种(毛桃、毛桃2号、山桃、筑波5号、桃巴旦、陕西桃巴旦、Nemaguard、GF305、GF43和GF1869)的1年生苗为材料,对其在持续淹水胁迫下叶片的光合特性进行测定,发现不同品种的各项光合生理指标变化幅度不同。以各项指标的耐涝系数作为衡量指标,利用主成分分析将8个单项光合指标综合成2个独立的综合指标,通过隶属函数分析将10个品种划分为3类:GF43和GF1869强耐涝,毛桃、毛桃2号、筑波5号、桃巴旦、陕西桃巴旦、Nemaguard和GF305中等耐涝,山桃不耐涝。

关键词: 桃 砧木 耐涝性 光合生理指标 主成分分析 综合评价

Abstract: The effective evaluation of waterlogging tolerance of different peach rootstock cultivars is necessary for the proper choice of suitable cultivars in production areas usually have waterlogging phenomenon. The experiment was conducted at peach experimental orchard of Jiangsu Academy of Agricultural Sciences with one-year-old seedlings of 10 peach rootstock cultivars. The photosynthetic indexes were measured for evaluating the waterlogging tolerance. It was found that the change range of each index was inconsistent in different cultivars. Based on the changes of the photosynthetic indexes in response to submergence stress, the eight single indexes could be classified into two independent comprehensive components through principal component analysis. Based on subordinate functional analysis the ten peach rootstock cultivars were divided into three groups, namely high, medium and poor waterlogging tolerance cultivar group. GF43 and GF1869 belonged to high waterlogging-tolerance type; Maotao, Maotao 2, Tsukuba 5, Taobadan, Shaanxi Taobadan, Nemaguard and GF305 belonged to medium waterlogging-tolerance type; Shantao belonged to poor waterlogging-tolerance type.

Keywords: peach, rootstock, waterlogging tolerance, photosynthetic index, principal component analysis, comprehensive evaluation

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