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不同遮阴条件下天全岩白菜生长状态及生理变化的研究

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中文摘要:目的:分析不同光照条件下(100%,80%,60%,40%,20%)天全岩白菜的生长和生理指标,探讨了天全岩白菜对不同光强环境的生理适应机制,为天全岩白菜生产栽培提供理论依据。方法:以天全岩白菜为研究对象,测定其新叶叶长、叶宽、新叶数量、新叶面积、鲜重、干重、比叶重及光合色素、丙二醛(MDA)、可溶性糖、可溶性蛋白、游离脯氨酸含量和超氧化物歧化酶(SOD)活性。结果:生长和形态指标值在100%,80%,60%处理下均高于40%,20%处理,且60%处理除比叶重外各指标值均显著高于其他处理;叶绿素和类胡萝卜素的含量在100%,80%,60%处理下均高于40%,20%处理,叶绿素a/b值在40%,20%处理下高于100%,80%,60%处理,SOD活性、可溶性糖、可溶性蛋白及游离脯氨酸含量在100%,80%,60%处理下均高于40%,20%处理,MDA含量在40%,20%处理高于100%,80%,60%处理;其中叶绿素(a+b)、可溶性糖含量和SOD活性在60%处理均最高,MDA含量在60%处理最低。结论:60%处理天全岩白菜生长最好,其次是100%,80%处理,40%,20%处理天全岩白菜生长差。

中文关键词:天全岩白菜 遮阴 生理 生长

Research on growth state and physiological changes of Tianquan *Bergenia purpurascens* under different shade conditions

Abstract:Objective: To study the growth index and physiological index of Tianquan *Bergenia purpurascens* under different shade conditions (100%, 80%, 60%, 40%, 20%), and investigate its adaptation mechanism to shade environment so that it can provide theoretical basis for cultivation and production. Method: The growth index such as the length, the width and the number of new leaves, and leaf area, fresh weight, dry weight and specific leaf weight of the samples which were collected from the beginning of March to late May under different shade conditions were measured. The physiological index including the contents of photosynthetic pigments,MDA, soluble sugar, soluble protein, proline and the activity of SOD were measured all together. Result: The growth and morphological index under light intensity 100%-60% were higher than those under light intensity 40%-20%. And except specific leaf weight, the growth and morphological index were significantly higher under light intensity 60% than those under the other shade conditions; The contents of Chla, Chlb, Chl (a+b) and Car under light intensity 100%-60% were higher than those under light intensity 40%-20%, while Chla/b was higher under light intensity 40%-20%; The activity of SOD, soluble sugar, soluble protein and proline contents were higher under light intensity 100%-60%, while MDA content was higher under light intensity 40%-20%. Chl(a+b) content, soluble sugar content and activity of SOD were the highest under light intensity 60%, but MDA content was the lowest. Conclusion: Sixty percent irradiance treatment was the most favorable to the growth of Tianquan *B. purpurascens*; 100%-80% irradiance treatments were favorable to its growth; 40%-20% irradiance treatment was negative for its growth.

keywords:Tianquan *Bergenia purpurascens* sunshade physiology growth

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