

研究报告

滤光膜对黄檗幼苗生物量及初级氮同化酶活性的影响

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收稿日期 2005-11-3 修回日期 2006-8-2 网络版发布日期 接受日期

摘要 以日光为对照, 采用红色、黄色、蓝色和绿色4种滤光膜遮光处理温室栽培的黄檗幼苗100 d, 测定了不同光环境下幼苗生物量、叶片叶绿素含量、可溶性蛋白含量、硝酸还原酶(NR)活性及谷氨酰胺合成酶(GS)活性的变化。结果表明, 4种滤光膜处理均抑制黄檗幼苗的生长, 黄檗幼苗的全株生物量与日光下的差异均达到显著水平($P < 0.05$)。4种滤光膜对黄檗幼苗株高、茎径的影响与对全株生物量的影响相似; 红膜和黄膜处理对黄檗幼苗根冠比影响不明显, 蓝膜和绿膜处理明显抑制地下部分的生长($P < 0.05$); 蓝膜、绿膜和红膜遮光的黄檗幼苗叶片叶绿素含量显著高于日光下的黄檗幼苗($P < 0.05$), 以蓝膜处理最为突出; 红膜处理增加了叶绿素a的比例, 而蓝膜处理则使叶绿素a比例减少。经滤光膜遮光处理的黄檗幼苗可溶性蛋白含量均显著高于对照, 且叶片NR和GS活性也显著高于日光下对照。

关键词 [滤光膜](#) [黄檗](#) [生物量](#) [氮同化](#)

分类号

Effects of color films shading on *Phellodendron amurense* seedlings biomass and primary nitrogen-assimilation enzyme activities

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Abstract

In this paper, greenhouse *Phellodendron amurense* seedlings were shaded with red, yellow, blue, and green films for 100 days, and their biomass, chlorophyll and soluble protein contents, and nitrate reductase and glutamine synthetase activities were determined. Compared with exposure under sunlight, color films shading decreased the seedlings biomass significantly. Plant height and stem diameter had the similar trend with plant biomass. Root/shoot ratio was less affected by red and yellow films shading, while root biomass was decreased significantly under blue and green films shading. Leaf chlorophyll content was increased significantly under the shading with blue, green and red films, especially with blue film. Red film shading increased the chlorophyll a/b ratio, while blue film shading was in adverse. Under color films shading, soluble protein content and nitrate reductase and glutamine synthetase activities were significantly higher than the control.

Key words [Color film](#) [Phellodendron amurense](#) [Biomass](#) [Nitrogen assimilation](#)

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扩展功能

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