

光质对水稻幼苗生长及生理特性的影响

郭银生, 谷艾素, 崔瑾 **

南京农业大学生命科学学院, 南京 210095

Effects of light quality on rice seedlings growth and physiological characteristics.

GUO Yin-sheng, GU Ai-su, CUI Jin

College of Life Sciences, Nanjing Agricultural University, Nanjing 210095, China

- 摘要
- 参考文献
- 相关文章

全文: PDF (902 KB) HTML (1 KB) 输出: BibTeX | EndNote (RIS) 背景资料

摘要 以荧光灯为对照, 采用发光二极管(light emitting diode, LED)精确调制不同光谱能量分布, 研究了光质对‘武运粳7号’和‘抗优63’两种水稻幼苗生长及生理特性的影响. 结果表明: 光质对两个品种水稻幼苗生长有显著影响且存在差异. 蓝光显著抑制幼苗株高, 提高‘武运粳7号’叶片的可溶性蛋白含量及两个品种水稻五叶期幼苗的壮苗指数; 红光显著提高三叶期幼苗的茎基直径、壮苗指数以及五叶期叶片的可溶性糖和淀粉含量; 红蓝组合光显著提高三叶期幼苗的根数、茎基直径、壮苗指数、根系活力和可溶性糖含量, 以及五叶期幼苗的鲜、干质量、壮苗指数、叶片可溶性糖和蔗糖含量; 黄光可在幼苗生长初期明显增加株高, 提高叶片色素含量. 总体上, 红蓝组合光有利于培育水稻壮苗.

关键词: 光质 水稻 幼苗 生长 生理特性

Abstract: By using light emitting diode (LED) to accurately modulate spectral energy distribution, and with fluorescent light as the control, this paper studied the effects of light quality on the seedlings growth and physiological characteristics of rice cultivars ‘Wuyunjing 7’ and ‘Kangyou 63’. Light quality had significant effects on the seedlings growth, and there existed differences at different growth stages. Blue LED inhibited the height growth significantly, and increased the leaf soluble protein content of ‘Wuyunjing 7’ and the healthy index of the two rice cultivars at five-leaf stage. Red LED increased the stem diameter and healthy index at three-leaf stage and the leaf soluble sugar and starch contents at five-leaf stage significantly. Red-blue LED increased the root number, stem diameter, healthy index, root activity, and root soluble sugar content at three-leaf stage and the fresh mass, dry mass, healthy index, and leaf soluble sugar and sucrose contents at five-leaf stage significantly. Yellow LED increased the plant height and leaf pigment content at initial growth stage. Overall, red-blue LED was more beneficial to the culture of strong rice seedlings.

Key words: light quality *Oryza sativa* seedling growth physiological characteristics

服务

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ E-mail Alert
- ▶ RSS

作者相关文章

引用本文:

. 光质对水稻幼苗生长及生理特性的影响[J]. 应用生态学报, 2011, 22(06): 1485-1492.

. Effects of light quality on rice seedlings growth and physiological characteristics.[J]. Chinese Journal of Applied Ecology, 2011, 22(06): 1485-1492.

链接本文:

<http://www.cjae.net/CN/> 或 <http://www.cjae.net/CN/Y2011/V22/I06/1485>

没有本文参考文献

[1] . 红裸须摇蚊幼虫生物标志物系统对苯酚的响应[J]. 应用生态学报, 2011, 22(07): 1900-1906.