

研究报告

## 钾素水平对网纹甜瓜叶片光合特性及叶绿体亚显微结构的影响

林多<sup>1,2</sup>, 黄丹枫<sup>1</sup>, 杨延杰<sup>2</sup>, 陈宁<sup>2</sup>

<sup>1</sup>上海交通大学农业与生物学院, 上海 201101; <sup>2</sup>莱阳农学院园艺系, 山东青岛 266109

收稿日期 2006-5-9 修回日期 网络版发布日期 2007-6-1 接受日期 2007-1-30

**摘要** 在设施基质栽培条件下, 研究了营养液中120、240及360 mg·L<sup>-1</sup> 3个钾素水平对网纹甜瓜‘甜甜1号’叶片光合特性及叶绿体亚显微结构的影响. 结果表明, 营养液中钾素水平过低(120 mg·L<sup>-1</sup>)或过高(360 mg·L<sup>-1</sup>)均导致网纹甜瓜叶片净光合速率下降, 使叶绿体片层结构混乱、变形和片层数减少, 但对CO<sub>2</sub>补偿点(70 μl·L<sup>-1</sup>)、饱和CO<sub>2</sub>(600 μl·L<sup>-1</sup>)、光补偿点(50 μmol·m<sup>-2</sup>·s<sup>-1</sup>)无显著影响. 适宜的钾素水平能显著提高叶片的饱和光强、羧化效率和表观量子效率, 3个指标分别为1 200 μmol·m<sup>-2</sup>·s<sup>-1</sup>、0.1364和0.0237. 在试验条件下, 提高温室内基质栽培网纹甜瓜叶片光合效率的最适钾素水平为240 mg·L<sup>-1</sup>.

**关键词** [网纹甜瓜](#) [钾素水平](#) [光合特性](#) [叶绿体亚显微结构](#) [基质栽培](#)

分类号

## Effects of potassium level on photosynthetic characteristics and chloroplast submicroscopic structure of muskmelon leaves.

LIN Duo<sup>1,2</sup>, HUANG Dan-feng<sup>1</sup>, YANG Yan-jie<sup>2</sup>, CHEN Ning<sup>2</sup>

<sup>1</sup>College of Agriculture and Biology, Shanghai Jiaotong University, Shanghai 201101, China; <sup>2</sup>Department of Horticulture, Laiyang Agricultural College, Qingdao 266109, Shandong, China

### Abstract

With soilless culture in greenhouse, this paper studied the effects of three potassium (K) levels (120, 240, and 360 mg·L<sup>-1</sup>) on the photosynthetic characteristics and chloroplast submicroscopic structure of muskmelon cv. ‘Tiantian No. 1’ leaves. The results showed that at low (120 mg·L<sup>-1</sup>) and high (360 mg·L<sup>-1</sup>) K levels, the net photosynthetic rate ( $P_n$ ) decreased, chloroplast lamellar structure disordered, and lamella number decreased. No significant effects were observed on CO<sub>2</sub> compensation point (70 μl·L<sup>-1</sup>), saturation CO<sub>2</sub> for photosynthesis (600 μl·L<sup>-1</sup>) and light compensation point (50 μmol·m<sup>-2</sup>·s<sup>-1</sup>) at the three K levels. The saturation light for photosynthesis, carboxylation efficiency and apparent quantum yield at 240 mg·L<sup>-1</sup> K level were significantly higher, being 1 200 μmol·m<sup>-2</sup>·s<sup>-1</sup>, 0.1364 and 0.0237, respectively. Under the conditions of this study, the optimal K level in the nutrient solution for muskmelon soilless culture was 240 mg·L<sup>-1</sup>.

**Key words** [muskmelon](#) [potassium level](#) [photosynthetic characteristics](#) [chloroplast submicroscopic structure](#) [soilless culture](#)

DOI:

通讯作者

### 扩展功能

#### 本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(1090KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

#### 服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

#### 相关信息

- ▶ 本刊中 [包含“网纹甜瓜”的相关文章](#)
- ▶ 本文作者相关文章

- [林多](#)
- [黄丹枫](#)
- [杨延杰](#)
- [陈宁](#)