

胁迫下不同砧木对嫁接黄瓜叶片氮素代谢的影响

河南科技学院园艺系, 河南新乡 453003

Effect of different rootstocks on nitrogen metabolism of grafted cucumber leaves under NaCl stress

Department of Horticulture, Henan Institute of Science and Technology, Xinxiang, Henan 453003, China

[摘要](#)[参考文献](#)[相关文章](#)Download: [PDF \(951KB\)](#) [HTML 1KB](#) Export: [BibTeX](#) or [EndNote \(RIS\)](#) [Supporting Info](#)

摘要 采用营养液栽培,研究了以中国南瓜“360-3×112-2”杂交种和黑籽南瓜为砧木,以“津春2号”为接穗的2种嫁接黄瓜和“津春2号”自根黄瓜成株期在80 mmol/L NaCl胁迫12 d后的生长状况和光合能力,以及试验期间叶片氮素代谢及其关键酶活性的动态变化。结果表明,NaCl胁迫12 d后以中国南瓜“360-3×112-2”杂交种为砧木嫁接黄瓜植株的主蔓生长速率、第一片功能叶面积、全株鲜重和光合参数均高于自根黄瓜和以黑籽南瓜为砧木的嫁接黄瓜;且以“360-3×112-2”杂交种为砧木嫁接黄瓜的生长状况好于以黑籽南瓜为砧木的嫁接黄瓜。NaCl胁迫处理植株叶片中硝态氮、铵态氮含量、谷氨酰胺合成酶(Gs)活性和可溶性蛋白含量比对照先高后低;而硝酸还原酶(NR)活性先低后回升,但仍低于对照,说明NaCl胁迫下,黄瓜叶片氮素代谢能力的降低。不同处理氮素代谢能力的差异其原因在于根系吸收氮源的能力差异。NaCl胁迫对以“360-3×112-2”杂交种为砧木的黄瓜植株生长抑制较小,氮素代谢能力下降较少,表现出较强的耐盐性,可以作为一个黄瓜耐盐砧木在生产上使用。

关键词: NaCl胁迫 嫁接黄瓜 砧木 中国南瓜杂交种 黑籽南瓜 氮素代谢

Abstract: The growth and nitrogen metabolism of leaves of grafted cucumber and non-grafted cucumber at the adult plant stage were studied in hydroponic solutions under 80 mmol/L NaCl stress, and non-NaCl stress. The Cucurbita moschata hybrid of “360-3×112-2” and Cucurbita ficifolia were used as rootstocks, and cucumber cultivar, “Jinchun 2” was used as scion. The results show that the growth of grafted cucumber with C. moschata hybrids of “360-3×112-2” as rootstock is better than that of C. ficifolia under the NaCl stress. The nitrate and ammonium nitrogen contents, activity of glutamine synthetase and content of soluble protein in leaves of all treatments under the NaCl stress are higher than those of the control at the prophase, then lower than those of the control at the anaphase, while the activity of nitrate reductase is depressed at first, and then increased, but lower than that of the control all the time. These changes suggest that the ability of nitrogen metabolism of the plants is decreased under the NaCl stress, and the difference of the ability of nitrogen metabolism between all treatments is due to the root capacities of nitrogen uptake. Tested plants grafted on C. moschata hybrid of “360-3×112-2” has less growth inhibition, less reduce of nitrogen metabolism ability, therefore, it is a promising rootstock for high salt tolerance.

Keywords: NaCl stress grafted cucumber rootstock Cucurbita moschata hybrid Cucurbita ficifolia nitrogen metabolism

Received 2009-10-26; published 2010-01-13

引用本文:

周俊国, 扈惠灵. 胁迫下不同砧木对嫁接黄瓜叶片氮素代谢的影响[J]. 植物营养与肥料学报, 2010, V16(5): 1217-1223

ZHOU Jun-Guo, HU Hui-Ling. Effect of different rootstocks on nitrogen metabolism of grafted cucumber leaves under NaCl stress [J]. Acta Metallurgica Sinica, 2010, V16(5): 1217-1223

Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

作者相关文章

- ▶ [周俊国](#)
- ▶ [扈惠灵](#)