

菠菜叶片硝态氮还原对叶柄硝态氮含量的影响

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Influence of nitrate reduction in leaf blades on nitrate-N concentration in petioles of spinach

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摘要 选用3个菠菜品种,设置N.0.1和0.3.g/kg²个施氮水平进行盆栽试验。在不同时期采样测定叶片内、外源硝酸还原酶活性、硝态氮代谢/贮存库大小,以及加入外源硝态氮培养后叶片硝酸还原酶活性的变化,探讨菠菜叶片的硝态氮还原与叶柄硝态氮含量的关系。结果表明,叶片内源硝酸还原酶活性、内源/外源硝酸还原酶活性比值、叶片的硝态氮代谢库大小及代谢/贮存库比值与叶柄硝态氮含量呈相反趋势。加入外源硝态氮培养后叶片硝酸还原酶活性的增加程度与叶柄硝态氮含量相一致。叶片内源硝酸还原酶活性高低及其发挥程度,叶片硝态氮代谢库大小及硝态氮在代谢、贮存库中的分配是造成品种间叶柄硝态氮含量高低差异的重要原因。

关键词: 叶片 叶柄 硝酸还原酶活性 硝态氮 硝态氮代谢库 叶片 叶柄 硝酸还原酶活性 硝态氮 硝态氮代谢库

Abstract: Pot experiment was carried out,using three spinach cultivars as test plants and at two N application rates(N 0.1 and 0.3 g/kg),to study the *in vivo* and the *in vitro* nitrate reductase activities(NRA),nitrate metabolic pool size (NMPS),storage pool size(NSPS) and the changes of the leave blade NRA response to excess nitrate.The obtained results showed that the *in vivo* NRA,the ratio of the *in vivo* to *in vitro* NRA,the NMPS and the ratio of NMPS to NSPS of blade are negatively related to the nitrate-N concentration in petiole.The percentage increase of blade NRA after cultivated by extra-source nitrate was positively related to the petiole nitrate-N concentration.Therefore,the *in vivo* NRA of blade and its influence,NMPS and nitrate-N distribution between the MPS and SPS of blade cell were the critical reasons for the difference of nitrate-N concentration in petioles over different spinach cultivars.

Keywords:

引用本文:刘忠^{1,2};王朝辉¹;李生秀¹.菠菜叶片硝态氮还原对叶柄硝态氮含量的影响[J] 植物营养与肥料学报,2007,V13(2): 313-LIU Zhong^{1,2};2;WANG Zhao-hui¹;LI Sheng-xiu¹.Influence of nitrate reduction in leaf blades on nitrate-N concentration in petioles of spinach[J] Acta Metallurgica Sinica, 2007,V13(2): 313-

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