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不同氮效率茄子基因型及其杂种F_1的氮素吸收特性

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Characteristics of nitrogen uptake in eggplant genotypes with different nitrogen efficiency and their hybrid F_1s

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摘要 为阐明杂种一代在氮素吸收方面的优势，研究了不同氮效率茄子基因型及其杂种 F_1的氮素吸收特性。试验以3个典型氮效率的茄子基因型及其F_1代为材料，研究其在正常供氮和低氮胁迫条件下的根系体积、根系干重、氮素吸收总量、根系活力、硝酸还原酶活性及谷氨酰胺合成酶活性。结果表明，与高氮低效-低氮低效基因型L相比，氮高效基因型H_1、H_2的单株根系体积、根系干重、根系活力以及氮素吸收总量均较大; 且具有较高的硝酸还原酶与谷氨酰胺合成酶活性。三个杂交组合F_1-1（L×H_1）、F_1-2（L×H_2）和F_1-3（H_1×H_2）的单株根系体积、根系干重、根系活力、硝酸还原酶活性、谷氨酰胺合成酶活性以及氮素吸收总量的中亲优势（H_m）和超亲优势（H_p）多为正向优势; 其中，组合F_1-3杂种优势最为明显。利用杂种在氮素吸收方面的优势，对于改善植株体内的氮代谢水平进而提高氮效率具有重要意义。

关键词： 茄子 氮效率 杂种优势 氮素吸收

Abstract： In order to elucidate the heterosis on nitrogen uptake in the F_1 hybrids, the nitrogen (N) absorption characteristics of the eggplant genotypes with different N efficiencies and their hybrid F_1s were studied. Under normal and low N stress conditions, root volume, root dry weight, N uptake, root activity, nitrate reductase activity and glutamine synthetase activity of leaves were studied in three typical eggplant genotypes with different N efficiencies and their hybrids. Compared with low N efficiency genotypes（L），the root volume, root dry weight, root activity, total N uptake per plant, nitrate reductase activity and glutamine synthetase activity of the cultivars with high N efficiency (H_1 and H_2) are all higher. In the three F_1 hybrids, F_1-1 (L × H_1), F_1-2 (L × H_2), and F_1-3 (H_1 × H_2), the root volume, root dry weight , root activity, nitrate reductase activityof leaves, glutamine synthetase activity of leaves and total N uptake per plant of H_m and H_p are mostly positive，in which the hybrid F_1-3 has the best heterosis. Using the heterosis on N uptake in the F_1 hybrids, it will be useful to improve the N metabolism and increase the N efficiency of the plant.

Keywords： eggplant (*Solanum melongena* L.) nitrogen efficiency heterosis nitrogen uptake

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