

农学—研究报告

不同浓度NaCl对两个玉米品种Na⁺、K⁺、Ca²⁺含量的影响

杜锦, 向春阳

天津农学院农学系

摘要:

比较不同耐盐性品种在NaCl胁迫下的离子含量的差异, 为耐盐玉米的筛选提供理论依据。玉米耐盐品种‘郑单958’和盐敏感品种‘齐单1号’在含0%、0.2%、0.4%、0.6%、0.8%、1.0% NaCl的砂子中生长, 分别测定根、茎和叶片中Na⁺、K⁺、Ca²⁺含量。NaCl胁迫下, Na⁺、K⁺、Ca²⁺含量在两个玉米品种间、NaCl浓度间差异均达到极显著水平。NaCl胁迫下, 两个玉米品种根茎叶中Na⁺含量均增加, 根中Na⁺含量增加的幅度大于茎和叶, ‘郑单958’根中的Na⁺含量高于‘齐单1号’; K⁺、Ca²⁺含量随NaCl浓度的升高而降低。高盐胁迫下, ‘郑单958’根中K⁺含量降低的幅度大于‘齐单1号’, 而茎中K⁺含量降低的幅度小于‘齐单1号’; ‘郑单958’茎和叶片中Ca²⁺含量降低的幅度小于‘齐单1号’。两个玉米品种在离子含量间表现出的差异非常明显, Na⁺、K⁺、Ca²⁺含量可以作为玉米耐盐性鉴定和筛选指标。

关键词: 无机离子

Effects of Different NaCl Concentration on the Contents of Na⁺, K⁺, Ca²⁺ of Two Maize Varieties

Abstract:

Variance of ion contents in different salt tolerance maize cultivars under NaCl stress was compared, which provided theoretical basis of salinity tolerance screening in maize. Maize (*Zea mays* L.) seed of a salt tolerant cultivar ‘Zhengdan958’ and a salt sensitive ‘Qidan1’ were germinated and growth in sand with 0%, 0.2%, 0.4%, 0.6%, 0.8%, 1.0% NaCl, respectively. The contents of Na⁺, K⁺, Ca²⁺ in roots, shoots and leaves were measured. Variance between varieties and NaCl concentration was a significant level on the contents of Na⁺, K⁺, Ca²⁺. Na⁺ contents of 2 maize varieties increased in roots, shoots and leaves, and Na⁺ content in roots was much higher compared to shoots and leaves under NaCl stress, and Na⁺ content in roots of ‘Zhengdan958’ was more than ‘Qidan1’. The contents of K⁺, Ca²⁺ decreased with NaCl treatment. Under severe salt stress, K⁺ content of ‘Zhengdan958’ decreased dramatically in roots, while K⁺ content of ‘Zhengdan958’ in shoots was lower than t ‘Qidan1’. Ca²⁺ content of shoots and leaves in ‘Zhengdan958’ reduced slower than ‘Qidan1’. The differences of the contents of ions between two cultivars were significant, which could be used as indexes for salinity tolerance identification and screening of maize.

Keywords: inorganic ion

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通讯作者: 杜锦

作者简介:

作者Email: 401558171@qq.com

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