

## 不同pH和不同氮素形态对小麦根中钙分布的影响

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Effects of pH and N forms on the distribution of Ca<sup>2+</sup> in wheat root

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**摘要** 利用电镜技术研究了不同pH(4.0和6.0)和氮形态(NH<sub>4</sub><sup>+</sup>-N和NO<sub>3</sub><sup>-</sup>-N)对小麦根系超微结构及根中Ca<sup>2+</sup>分布的影响。结果表明,1)pH.4.0处理下细胞结构中Ca<sup>2+</sup>明显少于pH.6.0处理;2)低pH造成质壁分离;3)铵态氮源处理下细胞结构中Ca<sup>2+</sup>明显少于硝态氮源处理,尤其体现在细胞间质、细胞壁、细胞膜上;4)铵态氮源处理也会导致细胞出现质壁分离,细胞结构松散,胞质外流;低pH加重这些现象。

**关键词:** 氮素形态 pH 小麦 钙分布 根超微结构 氮素形态 pH 小麦 钙分布 根超微结构

**Abstract:** Transmission electron microscopy was used to observe effects of two pH levels(4.0 and 6.0)and nitrogen forms (NH<sub>4</sub><sup>+</sup>-N,NO<sub>3</sub><sup>-</sup>-N) on the root ultrastructure and Ca<sup>2+</sup> distribution in wheat root.Results obtained were the following: 1) Ca<sup>2+</sup> content in wheat root cells at the pH 4.0 was lower than that at pH 6.0; 2) Low pH could induce plasmolysis of wheat root cells; 3) Ca<sup>2+</sup> in wheat root cells,especially in intercellular substances,cell wall and cell membrane,with NH<sub>4</sub><sup>+</sup>-N as nitrogen source was significant lower than NO<sub>3</sub><sup>-</sup>-N;and 4)Ammonium nitrogen was also able to induce plasmolysis,structure loss and cytoplasm outflow of wheat root cells.Low pH could exacerbate these symptoms.

**Keywords:**

## 引用本文:

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