

长期定位施肥对非石灰性潮土K<sup>+</sup>解吸动力学的影响崔德杰<sup>1,2</sup>;刘永辉<sup>2</sup>;隋方功<sup>2</sup>;张玉龙<sup>1</sup>

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Effect of long-term fertilization on K<sup>+</sup> desorption kinetics of noncalcareous fluvo-aquic soilCUI De-jie<sup>1,2</sup>;LIU Yong-hui<sup>2</sup>;SUI Fang-gong<sup>2</sup>;ZHANG Yu-long<sup>1\*</sup>

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**摘要** 采用连续液流法研究了长期定位施肥潮土K<sup>+</sup>解吸的动力学特性。结果表明,1)不同处理的土壤K<sup>+</sup>解吸的平衡时间和平衡解吸量有很大差异,平衡解吸量的变化与CEC和粘土中高岭石的含量密切相关;2)长期施肥使K<sup>+</sup>解吸速率产生了差异,解吸速率也与CEC、粘粒含量和高岭石的变化密切相关;3)不同处理在不同的反应阶段其解吸率差异很大,粘粒含量高的处理在反应初期解吸较快;4)平衡前不同时间段的解吸速率和解吸率与反应时间Int有极显著的线性相关,且与土壤粘粒含量密切相关;5)一级动力学方程是描述潮土中K<sup>+</sup>解吸过程的最优模型,该过程是扩散控制过程。

**关键词:** 长期施肥 钾解吸 潮土 化学动力学 长期施肥 钾解吸 潮土 化学动力学

**Abstract:** The characteristics of K<sup>+</sup> desorption kinetics on noncalcareous fluvo-aquic soil under long-term fertilization condition were studied using the liquid flow technique. The results indicated that: 1) There were great differentia on K<sup>+</sup> equilibrium desorption time and quantity among the different treatment, respectively. K<sup>+</sup> equilibrium desorption quantity was closely related with CEC and kaolinite content; 2) Long-term fertilization caused a discrepancy on desorbing velocity, which were also related with clay content, CEC and kaolinite content; 3) There exist differentia in different reaction phases on K<sup>+</sup> desorbing percentage, e.g. whose desorbing percentage rose fast at initial phase, but with high clay content; among different treatments; 4) There was a linear relationship between desorption velocity and the reaction time (Int), and desorption velocity was closely related with soil clay content; 5) First-order kinetic equation was the best model for K<sup>+</sup> desorption and the K<sup>+</sup> desorption was controlled by the diffusion process.

**Keywords:**

**引用本文:**

崔德杰<sup>1,2</sup>;刘永辉<sup>2</sup>;隋方功<sup>2</sup>;张玉龙<sup>1</sup>. 长期定位施肥对非石灰性潮土K<sup>+</sup>解吸动力学的影响[J] 植物营养与肥料学报, 2006, V12(2): 213-

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