

## 控释复合肥对番茄生长效应的影响研究

颜冬云<sup>1,2</sup>;张民<sup>1</sup>

1.山东农业大学资源与环境学院 山东 泰安 271018;2.中国科学院南京土壤研究所土壤与农业可持续发展国家重点实验室;南京 210008

### Effects of controlled-release and common compound fertilizers on potted tomato

YAN Dong-yun;ZHANG Min\*

College of Resources and Environment; Shandong Agricultural University; Taian 271018; China ; State Key Laboratory of Soil and Sustainable Agriculture; Institute of Soil Science; Chinese Academy of Sciences; Nanjing 210008; China

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**摘要** 采用流化床包膜技术制作的控释期为90d的4种养分比例不同的控释复合肥与等养分量的普通复合肥进行了番茄肥效对比盆栽试验。试验结果表明,控释复合肥具有养分缓慢释放的特点,施肥后40d达到高峰,有利于番茄生殖生长对养分的需求。施用控释复合肥番茄株高、叶面积、叶片数和鲜果重明显优于普通复合肥,且对防止病虫害有良好效果。施用控释复合肥番茄鲜果产量平均比普通复合肥提高63.1%。在本试验条件下,以CRF3处理,N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O用量为0.4-0.26-0.37g/kg(即N:P<sub>2</sub>O<sub>5</sub>:K<sub>2</sub>O养分比例为1:0.65:0.93)肥效最好。

**关键词:** 控释复肥 番茄 普通复肥 肥效 控释复肥 番茄 普通复肥 肥效

**Abstract:** In order to illustrate nutrient use efficiency of controlled-release compound fertilizers (CRCFs), the experiment of tomato fertilization in pot was conducted by applying the CRCFs and common compound fertilizers (CCFs) with same N, P and K rates at four application levels. The research results were: The nutrient release of CRCFs could be characterized by changes of available N, P, and K during the tomato-growing seasons. In early stage, the release rate of CRCFs increased slowly. 40 days later, there was a fastigium of release rate, and then the release rate was tardily declined. Release rate of N was the fastest and accumulated N in the soil was the highest, next were P and K. The scheduled nutrient release time of CRCFs for tomato was around 90 days. The nutrient release characteristics of common compound fertilizers (CCFs) in soils appeared like a descending curve. After fertilization, the N, P, and K in CCFs released rapidly. Within ten days, for treatments of CCF3 and CCF4 with higher application rates, the accumulated of nutrients in tomato soils became excessive and tomato suffered a poison due to the high concentration of nutrition ions in the seedling stage. On the contrary, all four-application rates of CRCFs were effective and safe for tomato throughout growing seasons; furthermore, the plant height, leaf area, number of leaves, growth potential of the tomato treated by CRCFs increased markedly in comparison with that treated by CCFs. The CRCFs not only promoted the growth conditions of the tomato, but also enhanced the biomass of tomato markedly. For the treatments with same rate of fertilizer application, no matter at which level, the root dry weight, shoot dry weight and fresh fruit for the CRCFs treatments increased significantly compare to those treated by CCFs. Moreover, the biomass of CRCFs treated tomato was higher than that treated by CCFs even though the application rate of CRCFs was less than the half of rates of CCFs. The optimum amount of fertilizers on tomato for a 250mm by 210 mm pot is N 0.4g / kg soil.

**Keywords:**

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