

控释尿素与普通尿素配施对菊花生理指标及产量和质量的影响

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Application of controlled-released urea combined with conventional urea on physiological indices, yield and quality of Chrysanthemum morifolium Ramat.

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摘要 2009和2010年采取田间实验方法研究控释尿素和普通尿素不同施用方式对菊花生长发育及产量和品质的影响。结果表明, 孕蕾期菊花叶片可溶性蛋白质和叶绿素含量、硝酸还原酶活性、根系活力明显高于生长旺盛期和开花期, 且施用尿素高于对照。控释尿素、控释尿素与普通尿素混合一次性基施可促进菊花生长发育前期干物质积累, 分次施用有利于后期干物质积累。施用尿素增加单株花序数、百朵花序鲜重, 对花序直径影响较少。两种尿素分别分次施用菊花产量明显高于一次性基施, 控释尿素与普通尿素等量混合分次施用产量高于其它处理。与普通尿素单施相比, 控释尿素提高了菊花总黄酮、蛋白质和可溶性糖含量, 其中以控释尿素与普通尿素等量混合分次施用的最高。综合菊花产量和品质指标, 在本实验条件下, 控释尿素与普通尿素等量混合分次施用的效果最佳。

关键词: 控释尿素 施用方式 产量 品质

Abstract: Nitrogen is one of the most important nutrients and plays a vital role in crop growth and yield production, rational nitrogen fertilization is essential to achieve an optimal yield and the desired product quality. Field experiments were conducted from 2009 to 2010 to compare the effects of controlled-release urea and conventional urea on the growth, yield and quality of Chrysanthemum morifolium. The results show that the physiological indices, including soluble protein content, chlorophyll content, nitrate reductase and root activities, are highest at the pregnant stage, and the indices in the treatments applied two kind of urea are higher than those of the control. The controlled-release urea and conventional urea applied as single basal application can improve growth and dry matter accumulation at the early stages of C. morifolium, while split fertilizations are more favorable to these in the later stages. The amounts of inflorescence number per plant and 100-inflorescence flesh weight are increased under both the controlled-release urea and conventional urea applications, while there are less effects on inflorescence diameters. Consequently, the yield increase is achieved mainly by increasing the inflorescence number per plant and 100-inflorescence flesh weight. The yields treated by split fertilization of both controlled-release urea and conventional urea are higher than those treated by single basal application, and the highest yield is obtained in the application of controlled-release urea combined with conventional urea. Compared with conventional urea application treatments, the controlled-release urea application treatments lead to significant increases of total flavonoid content, chlorogenic acid content, soluble sugar content and protein content of C. morifolium, and those of the treatment applied controlled-release urea combined with conventional urea are higher than those others. Taking account of yield and quality, the split fertilization of controlled-release urea combined with conventional urea is the optimum under this experiment condition.

Keywords: controlled-release urea fertilization method yield quality

收稿日期 2011-06-13; 接受日期 2012-02-27

基金名称:

“十二五”国家科技支撑计划

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引用本文:

祝丽香 王建华 高先涛. 控释尿素与普通尿素配施对菊花生理指标及产量和质量的影响[J] 植物营养与肥科学报, 2012, 18(2): 483-490

ZHU Li-xiang WANG Jian-hua GAO Xian-tao. Application of controlled-released urea combined with conventional urea on physiological indices, yield and quality of Chrysanthemum morifolium Ramat. [J] Acta Metallurgica Sinica, 2012, 18(2): 483-490

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