温明霞,石孝均.生长期喷钙提高锦橙果实品质及延长贮藏期[J].农业工程学报,2013,29(5):274-281

生长期喷钙提高锦橙果实品质及延长贮藏期

Improve fruit quality and prolong storage time of Jincheng orange by calcium sprayed in growth period

投稿时间： 2012-12-03 最后修改时间： 2013-01-25

中文关键词：钙,水果,贮藏,品质,衰老,柑橘

英文关键词:calcium fruits storage quality senescence citrus

基金项目:农业部公益性行业科研专项“最佳养分管理技术研究与应用（201103003）”

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中文摘要:

探讨钙对柑橘果实贮藏品质及衰老的影响，为合理调控柑橘钙素营养、延长果实的贮藏保鲜期提供理论和技术支撑。通过在北碚447锦橙（Citrus sinensis Osbeck cv. heng）生长的不同时期进行树体补钙，研究钙对果实贮藏品质及酶活性的影响。结果表明，在锦橙的生长期喷钙能提高果实钙含量，抑制果实贮藏过程中维生素C等物氧化分解，提高果实可溶性固形物含量和糖酸比，改善果实品质。不同时期喷钙均能提高果实中抗氧化酶（CAT、SOD）活性，降低细胞壁水解酶（PG、CX）、过氧酶（POD）活性，减轻脂质过氧化程度，果胶的分解转化速度减慢，丙二醛、可溶性果胶的含量明显降低，从而维持果皮具有一定的强度，延缓了果实的衰老，降低发生率，延长了果实的贮藏保鲜期。其中以幼果期喷钙在提高果实钙含量、延长贮藏期等方面的效果较好，其次是果实膨大期喷钙，成熟期喷钙效果最差。在幼果期和实膨大期喷钙是提高果实品质、延长采后果实贮藏保鲜期的重要措施。

英文摘要:

Calcium (Ca), as an important nutrition, can regulate the physiological metabolic process and is closely related to fruit quality, the shelf life of fruit and physiological diseases during storage time. It is meaningful to study the relation of Ca nutrition and fruit quality and senescence for producing fruit with high quality, alleviating economic loss from rott fruit and prolonging the fruit storage time. At present, there were some reports about Ca nutrition and fruit quality but many reported the effect of Ca on storage property of fruit b studying the respiration intensity and electric conductivity of fruits supplementing Ca solution on fruit during maturing stage or harvest time, few reported the effect of Ca on the inherent quality and the shelf life of fruits supplying Ca nutrition during fruit growing period. In order to make clear the effect of Ca nutrition sprayed on citrus trees in different growing periods on citrus fruit quality and senescence during storage time and propose comprehensive management measures for Ca nutrition of citrus orchards, the effect of Ca fruit quality including vitamin C, total sugar, acid, total soluble solid (TSS), some enzymes and materials related to fruit senescence including peroxidase(POD), catalase(CAT), superoxide dismutase(SOD), polygalacturonase(PG), cellulose(CX), malonaldehyde(MDA), protopectin(PP) and soluble pectin(SP) were studied in this paper. The effects of Ca or quality and enzyme activities of citrus fruits were studied by spraying calcium nitrate in different growth periods on Beibei-447 Jincheng orange (Citrus sinensis Osbeck, Beibei-44 orange). The results showed that Ca mass fraction in citrus fruits increased significantly, the oxygenolysis of vitamin C was restrained, total soluble solid (TSS), the ratio of sugar acid increased and the fruit quality were maintained during storage by spraying Ca on citrus trees in different growth periods. The activities of polygalacturonase (PG), cellulase (C and peroxidase (POD) of different Ca treatments decreased but those of superoxide dismutase (SOD), catalase (CAT) increased because of high Ca mass fraction in fruits. The stru of cell was protected and lipid peroxidation was alleviated so that the mass fraction of malonaldehyde (MDA) and soluble pectin decreased, the senescence of fruit was postpone the fruit was eventually kept in good during storage. The best effect on prolonging storage time of citrus fruit was to spray Ca on citrus trees in young fruit period, then spraying on citrus trees in fruit rapid growth period and the worst was in fruit mature period. Spraying Ca on citrus trees in young fruit period and fruit rapid growth period were important measures to keep citrus fruit in good quality during storage.

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