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عنوان مقاله:

Antimicrobial and Physiological Effects of Silver and Silicon Nanoparticles on Vase Life of Lisianthus (Eustoma grandiflora cv. Echo) Flowers

محل انتشار:

مجله بین المللی علوم و فنون باغبانی, دوره 4, شماره 1 (سال: 1396)

تعداد صفحات اصل مقاله: 10

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خلاصه مقاله:

Increasing quality and vase life of cut flowers play vital role in flower production industry. . Lisianthus (Eustoma grandiflora cv. Echo) has short vase life and it has been revealed that ethylene directly affect the initiation and process of senescence of petals. In this study, the effects of Silver and silicon nanoparticles with four concentrations of 0, 10, 20 and 40 mg L-1 with 4% sucrose as a support solution were evaluated on post-harvest life of 'Cinderella Lime' Lisianthus. The morphological and physiological parameters such as microbial population, flower vase life, relative fresh weight, solution uptake, total chlorophyll, ethylene and total dissolved solids were measured. Results revealed that all treatments extended the flower vase life when compared to control. The most effective treatment was the Highest concentration of nanoparticles (40 mg L-1). The average vase life of flowers was about 5 days in control (without any nano particle treatments) however; it reached to 17 days in flowers treated by 40 mg L-1 of both nanoparticles. Relative fresh weight, solution uptake, total chlorophyll, and total dissolved solids were also increased in the treated flowers, especially at higher concentrations. Microbial proliferations were not observed by application of both nanoparticles (Silver or Silicon) at 40 mg L-1 therefore this concentration was considered as the most effective level for both nanoparticles. Nano silver were more effective than silicon for reducing ethylene content. Overall the results suggest that silicon nanoparticle (40 mg L-1) is applicable as antimicrobial compound in combination with silver nanoparticles (40 mg L-1) as ethylene signaling inhibitor to increase the vase life of Lisianthus flowers commercially.

کلمات کلیدی:

Ethylene, Lisianthus, microbial proliferation, nanoparticles, vase life

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