

Title Evaluation of Some conventional biocides and nano silver particles on vase life, water relation and microbial proliferation of cherry brandy rose vase solution

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Abstract

Water relation interruption and stress is the major cause of vase life reduction in cut flowers and is mostly due to microorganism proliferation in the vase solution which results in vascular occlusion and solution uptake reduction. In order to study the biocidal effect of Nano Silver particles and some conventional biocides, Cherry Brandy roses were treated in a completely randomized design with: citric acid (at 300, 600 or 900 mg l⁻¹), aluminum sulphate (at 100, 200 or 300 mg l⁻¹), hydroxyquinoline citrate (at 200, 300 or 400 mg l⁻¹), calcium hypochlorite (at 400, 600 or 800 mg l⁻¹), sodium hypochlorite (at 400, 600 or 800 mg l⁻¹), colloid of nano silver particles (1, 2.5 and 5 %), tap water, or sterilized distilled water (control). Nano silver particles treatment resulted in the longest vase life, after which aluminum sulphate and citric acid were placed. Nano silver particles, aluminum sulphate and citric acid were the safest biocides. While, sodium hypochlorite treatment resulted in fresh leaf abscission and calcium hypochlorite treatment caused leaf desiccation. Nano silver particles, hydroxyquinoline citrate and calcium hypochlorite were the most effective treatment in controlling microbial proliferation. In most treatments there was an increase in relative fresh weight until day 5, after which a decrease was observed. Relative fresh weight reduction trend in most treatments was sharp except nano silver particles and aluminum sulphate. According to the observations, aluminum sulphate and nano silver particles treatments had the best effect on relative fresh weight. Results indicate that Cherry Brandy rose vase solution uptake is not influenced significantly by vase solution microbial population. Considering different aspects of biocide application, Nano Silver particles and aluminum sulphate were the best treatment groups respectively.