Effect of water deficit stress on the quality and postharvest conservation of roses

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Abstract

The amount of water to be supplied to greenhouse plants by irrigation has significant economic and environmental importance. Thus, the aim of this study was to evaluate the effect of water deficit through different soil water tensions as monitoring of irrigation on the quality and postharvest 'Carolla' rose flower stems. The experiment was conducted with 'Carolla' rose graftings in a greenhouse located at Empresa de Pesquisa Agropecuária de Minas Gerais (EPAMIG), with 6 soil water tensions (15, 30, 45, 60, 90 and 120 kPa) and 5 replications. Each plot was irrigated by drip irrigation line driven by electric valves according to each treatment, irrigating up to soil moisture at field capacity. Tensiometers and granular matrix sensors were installed for monitoring water tension. The harvests for quality assessment were performed for one year (May 31, 2011 to May 30, 2012) in 'Carolla' rosebush. After this period, the flower stems were harvested and evaluated for postharvest longevity at room temperature. In the quality evaluation, only the bud diameter was affected by water deficit treatments, which showed decreasing linear with increasing tensions. The best and worst results were observed for tensions of 15 and 120 kPa with diameters of 36.44 and 34.96 mm, respectively. No significant differences were observed between treatments on postharvest longevity of 'Carolla' flower stems, which showed average vase life of 11 days. Average fresh weight loss and water absorption from the beginning to the end of the experimental period (11 days) were of 5 g and 74 ml, respectively. To obtain better quality of 'Carolla' flower stems, irrigations with soil water tensions of 15 and 30 kPa are recommended.