

Abstract:

The attractive and long-lasting clusters of dense flowerheads of perennial phlox (*Phlox paniculata*) have great potential as a cut flower crop. Our studies indicated that the key determinants of postharvest performance of cut flower clusters in phlox are flower abscission, opening of additional flower buds during vase life and quality of the leaves on the inflorescence axis. We report here on a novel effect of thidiazuron (TDZ), a phenylurea derivative with strong cytokinin-like activity, in reducing flower abscission and delaying leaf senescence in cut flowerheads of “John Fanick” phlox, a recently identified superior selection for Texas landscapes. Freshly harvested flowerheads were put in glass vases containing either water or the desired concentration of TDZ (5-45 $\mu\text{mol}\cdot\text{L}^{-1}$) at 22 ± 1 °C under light. Observations on flower abscission, flower bud opening, and parameters related to leaf senescence such as chlorophyll and soluble protein content were performed for up to 2 weeks. In phlox, onset of flower abscission is initiated via shedding of funnel-shaped corolla with epipetalous stamens. Other parts of the flower, such as calyx and gynoecium, are not shed. Shedding of corolla may be initiated within 72 hours, whereas yellowing of leaves is seen only after 8-10 days. The leaves on the flowerhead axis kept in TDZ, in comparison with control, continued to retain dark green color, exhibited high pigment level and less degradation of proteins. Treatment with TDZ also greatly reduced the shedding of flowers and, depending upon the concentration used, induced opening of a significant number of additional flower buds during vase life. TDZ also counteracted the flower abscission-accelerating and leaf-senescence promoting effect of abscisic acid. These results indicate that TDZ may prove highly useful in improving postharvest performance of phlox cut flowerheads.