Title Quality improvement of cut flowers and potted plants with postharvest treatments based on various cytokinins and auxins

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Abstract

Ornamental products such as cut flowers and potted plants have a limited display life. The main reasons for ending the decorative life of these ornamentals are senescence and abscission of leaves and flowers, improper color development during flower opening or fast color fading, desiccation, and gravitropic bending. One of the strategies to cope with these problems is by manipulating the levels and activities of various plant growth regulators involved in these processes. The present work is focused on new application of postharvest treatments based on the plant growth regulators cytokinin and auxin. So far the application of these hormones was limited, mainly due to their poor transport from the pulsing solution to the target tissues. Our results demonstrate that application of the cytokinins benzyl aminopurine (BA) or thidiazuron (TDZ) as pulsing or dipping treatments delayed flower senescence in Anemone, Eustoma, and Grevillea cut flowers, and leaf senescence in Phlox cut flowers. These cytokinin-based treatments were combined with either the growth retardant paclobutrazol (in Anemone) or sucrose and ethylene action inhibitors (in Eustoma, Grevillea and Phlox) to prevent other undesired physiological processes. The auxin-based treatment included spray application of 2,4,5-trichlorophenoxy acetic acid (2,4,5-TP) to Bougainvillea potted plants, instead of -naphthalene acetic acid (NAA). This 2,4,5-TP auxin prevented completely bractα abscission in plants kept under indoor conditions without causing epinasty. The developed postharvest treatments can be used as recommended practices for the growers to enable the export of these important ornamentals.