

Abstract

Modified humidity packaging of potted campanula

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Currently, potted plants are packaged to prevent mechanical damages, ease handling and for marketing purposes. However, packaging is not designed to maintain optimal relative humidity (RH) that will simultaneously prevent fast loss of water and microbial attack. Microorganism growth is common when RH is high (95 – 100%) such as during transportation or when suboptimal packaging is used. Plant wilting upon loss of water is a common problem mainly in the retail sector where plants are in low-RH environments. We investigated how different packaging designs and packaging materials affect the keeping quality and RH within the potted mini campanula. To modify RH, plants were packaged in sleeves (top-open) and bags (top-sealed) made from oriented polypropylene (OPP), polylactic acid (PLA) and NatureFlex™ and compared with plants packaged in a commercial sleeve (OPP) and non-packed plants. No holes were made in the sleeves while the commercial sleeve had eight 10-mm holes. Two 1-mm holes were made in bags to avoid depletion of O₂. Plants were stored in darkness for 4 d at 16 °C and 68% RH and transferred to a keeping quality room (19 °C and 59% RH) for 13 d. On day 11 plants were unpacked and irrigated. The results showed that packaging design and packaging material affect the RH within the plant, weight loss and keeping quality. Grey mold developed in campanula flowers stored in OPP and PLA bags as RH within potted plants was 98-100%. Severe damage of flowers and leaves was observed in plants stored in OPP bags and in non-packed plants. Water was lost faster from plants in NatureFlex and commercial sleeves than in OPP and PLA sleeves but the quality was not different. Modified humidity packaging can be a solution to improve keeping quality of potted plants but needs further investigation before implementation in the industry.

Keywords: relative humidity, packaging, polypropylene, polylactic acid, NatureFlex, campanula, potted plant