

**Title** Influence of sucrose pulsing and sucrose in vase solution on flower quality of modified atmosphere low temperature (malt)-stored gladiolus cut spikes

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**Citation** ISHS Acta Horticulturae 847:129-138. 2009.

**Keyword** gladiolus; modified atmosphere low temperature (MALT) storage; flower quality; anthocyanins; carotenoids; floret size

### **Abstract**

Investigations were conducted to study the effects of a pre-storage sucrose pulse treatment and a post-storage sucrose inclusion in vase solution, on flower quality of modified atmosphere low temperature (MALT)-stored gladioli cv. 'Peter Pears' during vase life. For MALT storage of gladioli were packed with polypropylene (60  $\mu$ ) packaging and stored at temperature  $8\pm 2^{\circ}\text{C}$  for 5, 10 and 15 days. The flower quality of untreated MALT stored (5 days) gladiolus was similar to that of fresh spikes and better than that of spikes stored at low temperature without modified atmosphere (MA) packaging. The pre-storage pulse treatment ( $300\text{ mg L}^{-1}$  8-HQ for 1 h and  $200\text{ g L}^{-1}$  sucrose for 12 h) and the post-storage sucrose treatment in the vase solution ( $300\text{ mg L}^{-1}$  8-HQ +  $50\text{ g L}^{-1}$  sucrose) proved to be highly promising in augmenting the flower quality of the MALT-stored gladioli. These treatments significantly enhanced the water uptake by the gladioli spikes and retained higher fresh and dry weight of spikes, as well as higher levels of reducing and non reducing sugars in the tepals. MALT-stored gladioli that were treated with sucrose before and after storage showed improved bud opening, higher number of open florets per spike and enhanced floret and tepal size as compared to low temperature (MA and without MA)-stored gladioli or to fresh spikes. The pre- and post-storage treatments also retained higher tepal pigments (carotenoids and anthocyanins), and maintained brighter tepal color in the MALT-stored gladioli. These results suggest that the pre-and post-storage sucrose treatments combined with MALT storage, enable storage of gladioli spikes for 5 and 10 days, by maintaining higher water uptake, and improving flower quality with enhanced bud opening, floret size and tepal color.