

**Title** Obstruction of water uptake in cut chrysanthemum stems after dry storage: role of wound-induced increase in enzyme activities and air emboli

**Author** U. van Meeteren and L. Arévalo-Galarza

**Citation** ISHS Acta Horticulturae 847:199-206. 2009.

**Keyword** hydraulic conductance; stem occlusion; phenylalanine ammonia-lyase; peroxidase; polyphenol oxidase; vascular blockage; vase life

#### **Abstract**

Hydraulic conductance of cut chrysanthemum stems was lowered by the aspiration of air as well as by a wound-induced plant response. By measuring the hydraulic conductance of stem segments in which air could be introduced into and/or removed from the xylem vessels at various times after harvest, we showed that the two processes, air aspiration and wound-induced reactions, occur independently. The pronounced xylem occlusion after a longer period of dry storage is due to the progress of the enzymatic wound-induced reaction in time superimposed on emboli due to aspirated air. The wound-induced blockage was also present when air entrance was precluded from harvest. Measurements of enzyme activities in stems at time intervals from harvest showed that the activity of L- phenylalanine ammonia-lyase (PAL) increased after wounding in contrast to the activities of peroxidase and polyphenol oxidase. This suggests a major role of PAL in the xylem occlusion caused by wounding of the flower stem.