Title Gas exchange of flower buds and water transport capacity of the peduncle of two cut roses during vase life

Author W. Graf, W.B. Herppich, S. Huyskens-Keil and H. Grüneberg

Citation ISHS Acta Horticulturae 847:301-308. 2009.

Keyword postharvest; transpiration; respiration; hydraulic conductivity

Abstract

Cut rose (*Rosa hybrida* L.) cultivars largely differ in their vase life and bent-neck resistances. The most important factor determining these features is the postharvest water status management of plants, especially under drought stress. Structure and function of the peduncle is crucial for the bent neck susceptibility. In addition, all nutrients, carbohydrates, plant hormones and, of course, the water essential for flower development must pass through this part of the stem. The cut rose cultivars 'Akitio', typically with a short vase life, and 'Red Giant' with a long vase life were investigated. To quantify the water transport capacity of the peduncle, the actual hydraulic conductivity of unstressed rose stems was measured destructively in summer and winter. Furthermore, whole vase life gas exchange of flower buds was investigated from May 2006 to May 2007.

Dry matter related flower bud transpiration was always significantly higher in 'Red Giant' (n=8) than in 'Akito' (n=10). Throughout all studies the hydraulic conductivity was higher in 'Red Giant'. However, differences were only significant in winter.

It can be assumed that the generally better postharvest water management of 'Red Giant' plants may be related to a higher transport capacity. In addition, 'Red Giant' roses can achieve a long vase life despite of their high respiration rates.