

Title Postharvest water relations in cut rose cultivars with contrasting sensitivity to high relative air humidity during growth

Author Dimitrios Fanourakis, Susana M.P. Carvalho, Domingos P.F. Almeida, Olaf van Kooten, Wouter G. van Doorn and Ep Heuvelink

Citation Postharvest Biology and Technology, Volume 64, Issue 1, February 2012, Pages 64-73

Keywords Air emboli; Flower opening; Stem hydraulic conductivity; *Rosa hybrida*; Vase life; Vascular occlusion

Abstract

A constant high relative air humidity (RH) during cultivation can strongly reduce the vase life in some cut rose cultivars. We studied three contrasting cultivars in their tolerance to high RH in order to analyse in detail the water relations during postharvest and better understand this genotypic variation. Plants were grown at moderate (60%) and high (95%) RH, and cut flowers were placed in water immediately after cutting. Flowers of cv. Pink Prophyta grown at high RH did not open throughout vase life, while flower opening of cvs. Frisco and Dream was not affected by preharvest RH. Cultivation at high RH resulted in about 80% shorter vase life in Pink Prophyta, whereas in Dream and Frisco the negative effect was considerably smaller (15 and 9% shorter vase life, respectively). The shorter vase life and reduced flower opening of cut roses grown at high RH was due to a higher rate of transpiration both in the light and dark periods. It was found that the leaves of Pink Prophyta grown at high RH could partly close their stomata upon lowering of the water potential or when flower stalks were fed with abscisic acid, but stomata remained far more open than in leaves grown at moderate RH. The RH during cultivation did not affect stem hydraulic conductivity and its recovery after air emboli induction. Preventing vascular occlusion largely alleviated the high-cultivation-RH effect on vase life and flower opening, showing that the effect of high-cultivation-RH becomes only important if water uptake is limited.