

Title Interconnection of seasonal temperature, vascular traits, leaf anatomy and hydraulic performance in cut *Dodonaea* 'Dana' branches

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Abstract

Dodonaea 'Dana' is an Israeli hybrid with purple tinted leaves, cultivated for cut foliage branches. Cut *Dodonaea* branches showed strong seasonal variations in longevity, wilting after one week in winter, while displaying a vase life of three weeks in summer. We examined the relationship between functional anatomy, including vessel, stomata and trichome densities, vessel member length and leaf thickness, and water status of cut branches during vase life over two consecutive seasons, in relation to the average monthly day temperature. All the vascular and leaf anatomy traits examined were significantly correlated with seasonal average monthly day temperature. On day one of vase life the branch water status was positively correlated with vessel, stomata, and trichome densities, and negatively correlated with vessel member length and leaf thickness. However, on day 16, the branch water status was negatively correlated only with vessel member length and diameter, implying different relative importance of anatomical parameters for surviving water stress in the vase. Our results suggest that *Dodonaea* 'Dana' branches exhibit a strong interconnection between environmental parameters and postharvest performance, showing temperature-related seasonal anatomical changes, which lead to differential hydraulic performance during vase life.