A preliminary study into protocols for the long-term cold storage of *Leucospermum* potted plants

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Abstract

The potted plant industry based on *Proteaceae* species in South Africa is limited to the domestic markets as protocols for long-term cold storage as required for sea freight to European export markets have not been established. A preliminary investigation was carried out where potted plants of 3 *Leucospermum* cultivars 'High Gold', 'Raziya' and 'Scarlett Ribbon' were evaluated for chilling injury when stored at 0.5, 4 and 7°C respectively for a 21-day period. 'Scarlett Ribbon' showed the least chilling injury over the entire 10 day evaluation period, irrespective of storage temperature. However, no temperature regime could be recommended as an optimum storage temperature as all plants, irrespective of temperature treatment were considered unmarketable by day 5 of evaluation. In a following trial, potted plants of another 3 *Leucospermum* cultivars 'Jelena', 'Soleil' and 'Scarlett Ribbon' were evaluated for chilling injury when stored for a 21 day period at 6°C, either in darkness at 100% relative humidity (%RH) as untreated control plants or sprayed with the anti-transpirant Vapor Guard® or kept under low light conditions at 60-70% RH. Plants exposed to reduced relative humidity and low light level throughout the storage period displayed no or little chilling injury symptoms and were rated as marketable at the end of the 10 day evaluation period, whereas both the dark-stored control and Vapor Guard®-treated plants were considered unmarketable before or on day 5 of evaluation. Significantly lower stomatal conductance was measured within 24 h after removal from storage in potted plants stored in light. Similarly, 'Jelena', the cultivar which had the lowest chilling injury in this trial, also displayed significantly lower stomatal conductance in comparison to 'Scarlett Ribbon' and 'Soleil'. The role of stomata in the incidence of chilling injury during long-term cold storage of potted plants and stem of the members of *Proteaceae* requires further investigation.