

Influence of preharvest water stress on postharvest moisture loss of carrots (*Daucus carota* L.)

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SUMMARY

To understand the relationship between preharvest water stress and postharvest moisture loss, carrot cvs Eagle and Paramount were grown in muck soil in 6 l pots (eight carrots per pot) in a greenhouse at the University of British Columbia. The plants were watered to field capacity every second day for 5.5 months prior to receiving 100, 75, 50 and 25% field capacity water stress treatments (for 4.5 weeks), henceforth referred to as low, medium, high and severe water stress respectively. Postharvest moisture loss of carrots stored at 13°C and 32% relative humidity was monitored every second day for three weeks. The percent moisture loss was low in the low water stressed, and high in the severely water stressed carrots of both cultivars. Root crown diameter, weight, and water and osmotic potentials decreased, whereas specific surface area and relative solute leakage increased with increasing preharvest water stress. The results show that carrots adjust to water stress by lowering water and osmotic potentials. Root water potential, followed by relative solute leakage, were the variables which accounted for most of the variation in moisture loss. It is suggested that preharvest water stress lowers membrane integrity of carrot roots, and this may enhance moisture loss during storage.