

Title Green peduncles may indicate postharvest freshness of sweet cherries
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Abstract

The shelf-life of sweet cherries is limited, even if fruit are stored under optimal conditions. Since peduncle discolouration and dehydration may indicate initial quality changes, subjectively graded changes in peduncle appearance are often used to evaluate the decline in fruit freshness. The aim of the present investigation was to objectively determine the properties of fruit peduncles and their applicability as indicators of fruit freshness. Changes in colour and structure (shrinkage, bending, etc.) of fruit peduncles, initially green, turgid and metabolically fully active at harvest, mainly result from variations in water status. Selected components of water status and chlorophyll fluorescence parameters were determined to objectively characterize cherry fruit peduncle properties under various postharvest storage conditions. Due to their low resistance to vapour transfer cherry fruit peduncles had much higher water and CO₂ losses than fruit bodies. During the initial postharvest phase they significantly (35–45%) contributed to fruit water losses. Although there was a pronounced water transfer from the bodies into the peduncles this could only initially buffer the rapid decline in peduncle water content, which in turn, resulted in decreased vapour transfer conductance, and respiration and photosynthetic activity. The decline in the maximum photochemical efficiency (F_v/F_m), which also indirectly indicated chlorophyll degradation, was mainly due to water losses. Other temperature-dependent metabolic processes such as peduncle senescence affected these variations to a much lesser degree. The results show that changes in peduncle properties are acceptable indicators of losses of freshness in sweet cherries.