

New methodology to measure *in vivo* permeance on blueberry (*Vaccinium corymbosum*) skin: A correlation to quality during storage

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Abstract

A new methodology to measure the *in vivo* water permeance (P_w) of the blueberry cuticle, and its correlation with blueberry quality parameters during storage is presented. Physical surface properties [contact angle (θ), surface free energy (γ_{SV}), drop volume (V_d) and P_w] along with quality parameters (soluble solids, firmness, moisture content, and percentages of shriveled blueberries and blueberries with molds) were determined at different storage times. Neither θ nor γ_{SV} changed significantly, showing that the cuticle composition did not change. Additionally, V_d decreased linearly over time, indicating that P_w was constant during the measurement; furthermore, P_w magnitude decreased after 7 days of storage, indicating a structural change in the cuticle. Although soluble solids, firmness and moisture content did not change during the storage, the percentages of shriveled blueberries and blueberries with molds increased significantly, and both were correlated with P_w change. Therefore, this new methodology can be used to measure blueberries quality.