

Occurrence of physiological browning disorders in stored ‘Braeburn’ apples as influenced by orchard and weather conditions

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Abstract

Physiological storage disorders continue to cause sizable economic losses in a range of commercially important pomefruit cultivars. Given similar storage regimes, the incidence and severity of browning disorders in the apple cultivar ‘Braeburn’ can vary in different years in a way that can be explained by the interaction of preharvest seasonal and orchard factors. Over a three-year period (2016–2019) at the Kompetenzzentrum Obstbau Bodensee (KOB) in Southwest Germany a range of orchard and storage treatments were conducted for: air temperature during cell division for three weeks post petalfall or during four weeks preharvest, and crop load. Following controlled atmosphere (CA) storage, the disorder incidence for internal browning and cavity formation varied markedly over the three different growing seasons. Crop load treatments strongly influenced the expression of browning disorders in all years. Differences in air temperatures (Δ +/- 2 °C compared to ambient) during the cell division period showed little effect on browning incidence. Warm night temperatures (>10 °C) prior to harvest can reduce internal browning in ‘Braeburn’ apples during CA storage and shelf-life.