

Title Climatic conditions during growth relate to risk of Pink Lady™ apples developing flesh browning during storage

Author H. James, J. Jobling, D. Tanner, S. Tustin and I. Wilkinson

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Keyword Pink Lady™ apple; flesh browning; storage; climate

Abstract

Climactic conditions during two distinct periods of the growth and development of Pink Lady™ apples may be associated with the development of two expressions of flesh browning (FB) symptoms. The expression of symptoms has been linked to certain seasonal and storage conditions, growing district and several other factors have been implicated in the development of the disorder over the last two seasons. The variation between districts could be related to climatic conditions, for example low temperatures during the 50 days after full bloom growth period are speculated to increase the risk of CO₂ injury during storage as the cooler growing conditions result in more dense fruit with reduced gas diffusivity. Such fruit may accumulate high internal levels of CO₂ resulting in a predisposition to develop CO₂ related FB known as radial FB. Pink Lady™ apples grown in districts experiencing <1200 cumulative growing degree days from full bloom to harvest are at an increased risk of diffuse FB. Another climatic risk is if there is a low diurnal temperature variation during the 60 days prior to harvest maturity which is associated with reduced blush colour development. This situation results in growers delaying harvest in order to maximise the development of blush in order to meet strict quality guidelines designed for marketing of the cultivar under the trademark. Such fruit have an increased risk of developing both types of FB. Our results also show that the risk of developing both types of FB is higher with advanced fruit maturity at harvest. The atmospheric conditions and length of time of storage have also been shown to influence the severity of the disorder.