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Effects of pre- and postharvest factors on browning in Braeburn

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The effects of several pre- and postharvest factors on apple cv. Braeburn browning disorder (BBD) incidence using a nine-factor experimental design has been investigated. The design allowed the determination of the effects of single factors as well as their interaction with growing season and storage time. BBD increased in severity with storage duration. BBD incidence was reduced with calcium and potassium fertilizers application, while it was increased when triazoles were used. Delayed controlled atmosphere (DCA) application resulted in less BBD in storage, while treatment with 1-methylcyclopropene (1-MCP) increased BBD incidence. More BBD was observed in fruit stored at above optimal CO₂ levels. BBD incidence was increased when O₂ concentration in CA was increased from 1 kPa to 3 kPa (optimum CA) or 6 kPa. Finally, the various factors showed a different effect for different growing seasons and storage time. These findings suggest a possible mechanism for the development of BBD. Further work should focus on extending the experimental design to include the interactions between the different pre- and postharvest factors.

Keywords:

Braeburn browning disorder; fertilizers; triazoles; controlled atmosphere; 1-methylcyclopropene

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