

Russeting and Microcracking of ‘Golden Delicious’ Apple Fruit Concomitantly Decline Due to Gibberellin A₄₊₇ Application

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ABSTRACT. The effect of four applications of gibberellin A₄₊₇ [GA₄₊₇ (10 mg·L⁻¹ at 10-day intervals beginning with petal fall)] on water-induced russeting, formation of microcracks, and on fruit growth and deposition of the cuticular membrane (CM) was studied in developing ‘Golden Delicious’ fruit (*Malus ×domestica* Borkh.). Submerging developing apple fruit in deionized water for 48 h induced russeting in untreated control but not in GA₄₊₇-treated fruit. Immersing in water during early fruit development, 19 days after full bloom (19 DAFB), resulted in more russeting than immersions occurring later (139 DAFB). Water on the outer surface of epidermal segments increased the frequency of microscopic cracks in untreated controls but to a lesser degree in GA₄₊₇-treated fruit. The effect of GA₄₊₇ on water-induced russeting and formation of microcracks was larger during early as compared with later stages of fruit development. Fruit treated with GA₄₊₇ consistently had fewer microcracks as compared with non-treated control fruit. GA₄₊₇ had no effect on amounts or rates of cutin or wax deposition, strain, or mechanical properties of the CM as compared with the non-treated control. Thus, the decrease in russeting and formation of microcracks in the cuticle of GA₄₊₇-treated fruit must be accounted for effects on underlying epi- and hypodermal tissues.