

Title Exogenous spray application of prohexadione-calcium promotes fruit colour development of 'Cripps Pink' Apple

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Abstract

The effects of various concentrations, number of sprays of Prohexadione-calcium (ProCa) and summer pruning (SP) alone were investigated on fruit colour and other quality parameters of 'Cripps Pink' apple. The treatments included were: (i) control, (ii) SP, (iii) 250 mg L⁻¹ two sprays (3 and 33 days after full bloom (DAFB), respectively), (iv) 500 mg·L⁻¹ two sprays (3 and 33 DAFB, respectively), (v) 750 mg·L⁻¹ two sprays (3 and 33 DAFB, respectively), (vi) 250 mg·L⁻¹ three sprays (3, 33 and 63 DAFB, respectively), (vii) 500 mg·L⁻¹ three sprays (3, 33 and 63 DAFB, respectively), (viii) 750 mg·L⁻¹ three sprays (3, 33 and 63 DAFB, respectively). The reduction of shoot length was pronounced after the second spray application of Pro Ca. The treatment of two sprays of ProCa (500 mg·L⁻¹) and three sprays ProCa (500 and 750 mg·L⁻¹) showed the highest reduction in the shoot length as compared to control. The SP alone, and three sprays of ProCa (500 mg·L⁻¹ and 750 mg·L⁻¹ on 3,33 and 63 DAFB, respectively) significantly improved percent red blush, percent fruit for export, higher chromaticity value a*, lower b*, L * and hue angle on the fruit as compared to control. The treatment of three sprays of ProCa (750 mg·L⁻¹) resulted the highest accumulation of cyanidin 3-*O*-galactoside in apple skin than control. However, the treatment of three sprays (500 mg·L⁻¹) had the comparable concentration of cyanidin 3-*O*-galactoside to the treatment of three sprays ProCa (750 mg·L⁻¹). Fruit quality parameters such as fruit firmness, soluble solids concentration (SSC) and titratable acidity (TA) resulted in inconclusive outcomes, but still meet the export requirements. In conclusions, three spray applications of ProCa (500 mg·L⁻¹) on 3, 33 and 63 DAFB reduced shoot growth, improved fruit colour, accumulation of cyanidin 3-*O*-galactoside and also maintained other fruit quality attributes in 'Cripps Pink' apple.