



Optimum harvest maturity of ‘Monalisa’ apples cultivated in Southern Brazil

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The objectives of this study were to evaluate and determine the best maturity indexes to harvest ‘Monalisa’ apples produced in Southern Brazil. During three years, the fruit were harvested six times from 120 to 149 days after full bloom (DAFB) in the first year, three times from 119 to 137 DAFB in the second year, and three times from 126 to 143 DAFB in the third year. The fruit were stored at 0.8°C in controlled atmosphere (CA, 1.5 kPa O₂ and <0.5 kPa CO₂) for 6 m in the first year, in air for 3 m and 6 m in the second year, and in air and CA for 5 m and 9 m in the third year. Half of the fruit were treated with 1-MCP within 24 h after harvest in the second and third years. The increase in ethylene production, respiration, starch degradation and soluble solids content (SSC), and the decline in flesh firmness and acidity (TA) during on-tree maturation followed the expected pattern of early season cultivars such as Gala, the ‘Monalisa’ progenitor. Late harvested fruit had higher severity of decay and physiological disorders, compared to early harvested fruit. Superficial scald was the predominant disorder in the fruit, which was affected by harvest maturity, 1-MCP treatment and storage atmosphere and time. The results have shown that ‘Monalisa’ apple intended for immediate marketing should be harvested from 131 to 149 DAFB, with starch index ranging from 3.3 to 7.5 (1-9 scale), flesh firmness ranging from 19.6 lb to 15.6 lb, SSC ranging from 12.7 % to 14.7 %, and TA ranging from 0.66% to 0.56%. ‘Monalisa’ apple intended for mid- and long-term storage should be harvested earlier from 124 to 131 DAFB, with starch index ranging from 2.4 to 3.4, flesh firmness ranging from 20.4 lb to 19.4 lb, SSC ranging from 12.7 % to 14.3 %, and TA ranging from 0.67 % to 0.59 %.

Keywords: Starch index; flesh firmness; soluble solids; acidity; physiological disorders.