

Title Ripening management and postharvest fruit quality
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Abstract

Fruit ripening is a highly regulated process with coordinated genetic and metabolic events, leading to essential changes in gene expression, physiology, bio-chemistry and anatomy. These complex regulatory events transform a physiologically mature but inedible fruit into an edible, tasty product. Innovations in CA technology like dynamic controlled atmospheres (DCA) and/or the use of the chemical ethylene inhibitor (1-MCP) are new tools for the enhancement and preservation of quality and health promoting components in climacteric fruit. Dynamic CA, with non-destructive monitoring systems based either on ethanol concentration or chlorophyll fluorescence allows the use of oxygen atmospheres during storage that are close to the lowest tolerance limits for fruit without inducing excessive anaerobic metabolism. In contrast to other available technologies, 1-MCP has the potential to control ethylene action by blocking the ethylene receptors and thereby maintaining fruit quality, and avoiding specific storage disorders not only in storage but also during marketing and shelf-life. Sensory investigations and consumer expectation surveys have confirmed that aroma, firmness, crispiness and juiciness are the most relevant sensory traits. Ripening regulation by modern storage technology shows great benefits in terms of texture, total soluble solids (TSS) and acidity but often hampers aroma formation mainly depending on the at-harvest ripening stage of the fruit. In future, postharvest researchers will be challenged to meet consumer requirements with fruit that is well flavoured and nutritious.