

Title Postharvest control of fruit metabolism
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Abstract

Control of the metabolic processes underlying quality change in harvested plant organs requires the thoughtful selection and application of ‘appropriate’ cultural and technological tools. The determination of what constitutes an appropriate tool is dependent on the biology of the harvested plant organ and those components of physiology and pathology that comprise biological ‘limiting factors’. For example, the singular importance of the role of ethylene in the developmental processes of many fruit and vegetables following harvest has clearly been demonstrated many times. However, ethylene has little to no role in the development and decline of most harvested plant materials. Knowledge of the extent of ethylene’s involvement in quality loss should serve as a prerequisite in the application and evaluation of technologies that limit the production or action of the plant hormone ethylene, including preharvest applications of ethylene biosynthesis and action inhibitors, harvest management, postharvest use of refrigeration, ethylene action inhibitors, and postharvest application of modified atmospheres. Similarly, knowledge of ethylene’s lack of involvement should set the stage for the development of alternative cultural tools that may depend on the control of specific or global metabolic activities. As ever, caution must be exercised in the application of these and other cultural tools and in our advice to practitioners of these technologies given the real possibility of economic loss due to damage or compromised product quality. I will discuss biological factors that limit the usefulness of various technological tools designed to control plant metabolic processes and provide examples optimizing the application of these tools.