

Title Ethylene and Fruit Ripening
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Citation Journal of Plant Growth Regulation 26 (2): 143-159. 2007.
Keywords Ethylene; Fruit; Tomato; Ripening; Climacteric; Signal transduction

Abstract

The ripening of fleshy fruits represents the unique coordination of developmental and biochemical pathways leading to changes in color, texture, aroma, and nutritional quality of mature seed-bearing plant organs. The gaseous plant hormone ethylene plays a key regulatory role in ripening of many fruits, including some representing important contributors of nutrition and fiber to the diets of humans. Examples include banana, apple, pear, most stone fruits, melons, squash, and tomato. Molecular exploration of the role of ethylene in fruit ripening has led to the affirmation that mechanisms of ethylene perception and response defined in the model system *Arabidopsis thaliana* are largely conserved in fruit crop species, although sometimes with modifications in gene family size and regulation. Positional cloning of genes defined by ripening defect mutations in the model fruit system tomato have recently led to the identification of both novel components of ethylene signal transduction and unique transcription factor functions influencing ripening-related ethylene production. Here we summarize recent developments in the regulation of fruit ripening with an emphasis on the regulation of ethylene synthesis, perception, and response.