

Title Effect of exogenous application of jasmonates and 1-MCP for pre-and post-harvest control of peach and apple ripening

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Abstract

Two different models of fruit ripening, apple and peach, were utilized to study the effects on fruit quality of the exogenous applications of bioregulators able to control ethylene emission. In freestone peaches the ripening process is typically divided in two stages: an early phase during which softening proceeds slowly, and a milting stage with a rapid loss of firmness associated with a dramatic increase of ethylene emission. On the contrary, in apple, three distinct phases of ripening could be identified: a first one during which fruit soften slowly, a second one characterized by a more rapid decrease in firmness and a final phase of slow softening. A low basal rate of the hormone production is sufficient to promote the early phases of apple softening, while more rapid firmness declines are related to an increase in the internal ethylene concentration. With the intent of improving fruit appearance and quality and for a better understanding of the relationship between ethylene production and fruit softening, two chemicals (jasmonate and 1-MCP) were applied on nectarines (cv Stark Red Gold) and on apples (cv Mondial Gala &Fuji) in open field and post-harvest storage conditions respectively. Both chemicals induced distinct effects on the two specie. In fact jasmonates reduced ethylene emission in peach while tend to increase it in apple. On the contrary 1-MCP induced an opposite effect on the two specie: that means an ethylene reduction in apple and a stimulation in peach. This opposite trends induced by the two chemicals on the two specie were also characterized by biochemical and biomolecular analyses concerning the main parameters characterizing the ripening syndrome.