

Title Regulation of ethylene biosynthesis in fruits by aminoethoxyvinyl glycine and 1-methylcyclopropene

Author S. Lurie

Citation ISHS Acta Horticulturae 796:31-41. 2008.

Keywords pome fruit, Retain®, SmartFresh™, stone fruit

Abstract

Ethylene is known as the 'ripening hormone', although it has additional roles in plant development and in responses to biotic and abiotic stresses. Affecting either the rate of ethylene synthesis or its perception in fruit tissue will have an effect on ripening processes. Although ripening is also under the control of developmental signals, still, inhibiting the perception of ethylene in fruit will slow ripening and increase storage and shelf life of fruits. Two commercial compounds have been developed to inhibit either ethylene synthesis or ethylene perception. The first is aminoethoxyvinylglycine (AVG), sold commercially as ReTain®, which inhibits the activity of ACC-synthase and is in use in preharvest orchard sprays. The second is 1-methylcyclopropene (1-MCP), sold commercially as SmartFresh™, which binds competitively and irreversibly to the receptors of ethylene in the fruit cell and prevents the action of ethylene. The active form is a gas, as is ethylene, and it is in use as a postharvest treatment, but is also being developed as a preharvest spray. The effects of AVG and 1-MCP on modulating fruit ripening will be discussed, with emphasis on pome and stone fruits.