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1-MCP, a novel plant growth regulator for regulation of ripening

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1-methylcyclopropene (1-MCP) is a wonderful plant growth regulator, developed by Sisler and Blankenship (1996). It is an inhibitor of ethylene perception, which helps in improving the shelf and storage life of horticultural produce significantly by regulation of ripening. 1-MCP is registered for use on a number of horticultural crops such as apple, apricot, avocado, banana, broccoli, kiwifruit, pear, mango, melon, peach, nectarine, persimmon, plum, and tomato. However, apple is the most significant crop in which 1-MCP is commercially and extensively used around the world because apple is a crop for which limited ripening after harvest is desirable. For many other fruits, successful commercialization of 1-MCP will require an appropriate balance between 1-MCP concentrations and exposure periods that will delay but not inhibit ripening. The effects of 1-MCP on quality of these crops, as well as its effects on physiological disorders and pathological diseases, are significantly different and variable. The concentration and exposure time of different commodities to 1-MCP varies widely however, effective concentrations are low and range from 2.5 nl l^{-1} to 1 ml l^{-1}. Similarly, 1-MCP is most commonly applied at 20-/25^{0}C, but can be used at lower temperatures in some commodities. In general, treatment durations of 12-/24 h are considered sufficient to achieve a full response of 1-MCP in any crop. Several factors such as cultivar, developmental stage of the fruit/vegetable, time from harvest to treatment, and multiple applications, should be considered while using 1-MCP. Similarly, depending on the crop being treated, 1-MCP may have a variety of effects on respiration, ethylene production, volatile production, chlorophyll degradation and other colour changes, protein and membrane changes, softening, disorders and diseases, acidity and sugars.

Biography

Vijay Rakesh Reddy S is a Ph.D. Scholar at Indian Agricultural Research Institute, New Delhi. He completed his masters from GKVK, UAS, Bangalore securing top position at the university level. His area of interest is fresh fruit handling, minimal processing and utilization of eco-friendly techniques. At present he is working on "Ethylene modulation in mango using different ethylene inhibitors".

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