

Title Application of 1-methylcyclopropene to prevent spoilage
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Abstract

Purpose of review: 1-Methylcyclopropene (1-MCP) is an ethylene antagonist that binds to ethylene receptors in the plant cell and prevents ethylene from binding, thereby inhibiting ethylene signal transduction and action. This review highlights some areas of research involving application of 1-MCP and refers the reader to recent reviews that discuss other aspects in more detail.

Recent findings: 1-MCP was approved for use commercially in 2002 as a postharvest treatment for a number of climacteric fruits. However, research is still being conducted on the use of 1-MCP in a number of areas including: problems encountered in up-scaling the use of 1-MCP from laboratory experiments to commercial store rooms, understanding the effects of 1-MCP on different cultivars of fruits approved for treatment, understanding the responses of fruits of different physiological age to 1-MCP, examining the effects of 1-MCP on physiological and pathological disorders that appear in storage, examining the effects of 1-MCP on non-climacteric fruits and vegetables, and examining the effects of 1-MCP on fresh-cut products. 1-MCP is also being used as a tool to understand what genes in the different ripening processes are induced by ethylene and how inhibition affects their expression and, as a consequence, the pathway of the ripening process.

Directions for future research: 1-MCP is being developed as a formulation suitable for preharvest application, a possibility that might lead to a range of additional treatments that can be applied to commodities in the field and orchard.