Title Is delay in application a factor that reduces efficacy of 1-methyl-cyclopropene response in pears?

Author G. Calvo and A.P. Candan

Citation ISHS ActaHorticulturae 945:345-349. 2012.

Keyword pear; ethylene; maturity; 1-methylcyclopropene; concentration; timing

Abstract

'Williams' pear (*Pyrus communis* L.) is the most important cultivar grown in Alto Valle of Rio Negro, Argentine. 1-methylcyclopropene (1-MCP) proved to be highly effective in inhibiting ethylene action and maintaining postharvest quality. However, due to logistical problems the commercial application of 1-MCP is often delayed, which may reduce the efficiency of this treatment. In this study we determined the influence of 0.3 and 0.6 ml L^{-1} of 1-MCP applied after 0, 3, 7 and 10 days at 0°C on the post harvest quality of early and late harvested 'Williams' pears. Untreated fruit was used as control. After 60 and 90 days of storage at -0.5°C, ethylene production and maturity indexes (flesh firmness, soluble solids, acidity, starch degradation, epidermis color), were measured. The results showed that all 1-MCP treatments significantly reduced ethylene production and fruit ripening irrespective of the delay period. The ethylene production of fruits was undetectable during the delay period at 0°C, meaning that ethylene was not affected by time at 0°C. Moreover, no differences were observed between 1-MCP concentrations, with 0.3 ml L^{-1} sufficient to reduce ethylene production and ripening even in late harvested fruits. We hypothesize that the temperature during the delay period plays a key role on the maintenance or reduction of 1-MCP efficacy. It is important to emphasize, that the results obtained under experimental conditions may not be directly extrapolated to a commercial-scale, since there are other factors that could reduce the effectiveness of 1-MCP treatments.