

Title Strategies for applying 1-methylcyclopropene (1-MCP) to 'Packham's Triumph' pears
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Citation ISHS Acta Horticulturae 909:699-706.2011.
Keywords softening; color change; fruit quality; ethylene

Abstract

Two of the main problems during postharvest of 'Packham's Triumph' pears (*Pyrus communis* L.) are premature yellowing and flesh softening, and both processes are controlled by ethylene in this fruit crop. On the other hand, many postharvest strategies have been developed in order to extend postharvest life in pears, including controlled atmosphere, ethylene scrubbers and 1-MCP (SmartFresh™) applications after harvest. The application of 1-MCP in 'Packham's Triumph' pear has shown an effective control of ripening; however its effect is quite strong and in some cases the fruit takes a long time to reach an eating stage, especially when the application is performed immediately after harvest. The objective of this study was to evaluate two different strategies of 1-MCP applications in order to reduce the time of reaching a ready-to-eat stage. 'Packham's Triumph' pears were treated with 1-MCP (at 200 ppb per 24 h) at harvest and after 15 or 30 days in cold storage. A second strategy was to apply 1-MCP in combination with ethylene (C₂H₄) at harvest. After the application, all the treatments were stored at 0°C, and a group of physiological and quality parameters were evaluated at removal from cold storage and after a shelf life period at 20°C. The strongest delay in ripening occurred in fruit treated with 1-MCP immediately after harvest. They had very low ethylene production and respiration rates and maintained firmness and green color longer than the other treatments. The 1-MCP treatment applied after a cold storage period or in combination with ethylene at harvest had a ripening response intermediate between 1-MCP applied immediately after harvest and the control fruit without treatment which ripened the fastest. This effect may provide an alternative for applying 1-MCP in 'Packham's Triumph' and possibly other pear cultivars.