

Abstract:

Argentina produces more pears (*Pyrus communis*) than any other South American country. 'Williams' is the main variety, followed by 'Packham's Triumph' and 'Beurré D'Anjou'. The potential for commercial application of 1-methylcyclopropene (1-MCP), an ethylene inhibitor, to maintain the quality of 'Williams', 'Beurré D'Anjou' and 'Packham's Triumph' pears under cold storage conditions was investigated. The 1-MCP gas concentrations used were 0, 10, 100, 200, 400 and 600 ppb, generated from measured amounts of SmartFresh™ powder. Fruit from each cultivar were removed from storage periodically for up to 9 months and evaluated after 1, 7 and 14 days at 20 °C. 1-MCP treatment slowed loss of firmness, titratable acidity and color change and prevented development of several physiological disorders. These effects were concentration-dependent: 10 ppb was not enough to delay ripening, but 100, 200, 400 and 600 ppb decreased ripening. 'Williams' pears developed satisfactory eating quality at each evaluation, but required nearly 20 days when the fruit treated with 400 or 600 ppb was stored for a short period (90 days). Late-harvested 'Williams' required higher 1-MCP concentrations to maintain fruit firmness, acidity and green color. When 1-MCP treatment was delayed for more than 20 days, very little or no response occurred. Retreating 'Williams' after 30 and 60 days yielded some response when pears were treated at harvest with 100 ppb 1-MCP, but not when they were treated with 10 ppb. 1-MCP was very effective in preventing the development of scald in 'Beurré D'Anjou' and 'Packham's Triumph', but treatment with 400 and 600 ppb concentrations inhibited the normal ripening capacity when stored for less than 7 months. The results indicate that the efficacy of 1-MCP is affected by its concentration, the maturity of the fruit before application and storage duration.