

Title Ethylene evolution from detached apple spurs in response to chemical thinners.  
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#### **Abstract**

In a field experiment conducted in Hawke's bay, New Zealand, in 1998 and 1999, ethylene evolution from detached fruiting apple spurs was measured after the application of various bloom and post-bloom thinning agents. Ethylene evolution from fresh detached spurs of 'Splendor' apple trees increased one day after the application of a bloom thinning spray of ethephon or NAA, and remained higher than rates of ethylene evolution by detached spurs from unsprayed control trees for 6 (NAA) or 10 (ethephon) days. Both ethylene evolution and fruit abscission during the initial drop period were higher on trees treated with ethephon compared to NAA; however, final fruit set was similar for these two treatments. Ethylene evolution was significantly higher following NAA application onto 'Fuji' trees compared with naphthaleneacetamide, but final fruit set was reduced by a similar amount (approx equal to 20%) for both of these materials. The application of benzyladenine (BA) to 'Pacific Rose' apple trees when the average diameter of spur fruit was either 4 mm (6 days after full bloom) or 7 mm (12 days after full bloom) resulted in a significant increase in the rate of ethylene evolution and also reduced final fruit set. When the application of BA was delayed until the average diameter of spur fruit was 14 mm (24 days after full bloom), neither the rate of ethylene evolution nor final fruit set was affected. Although an increase in the rate of ethylene evolution was a prerequisite for thinning in the present experiments, the magnitude of this increase was not related to final thinning efficacy.