

Title Ethylene ripening of pears by unconventional means: use of an ethylene release Canister[™] within covered pallets

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Keyword *Pyrus communis*; conditioning; aroma; packaging comparison; constant release

Abstract

The experiment described is part of a project that aims to develop and test new ethylene conditioning technologies and improved packaging and handling strategies necessary to supply optimally ripened ready-to-eat pears. The key technology demonstrated here is a pallet-scale Ethylene Release Canister[™] (ERC[™]), a device resembling an aerosol can but featuring a unique internal valve (patent pending) that releases compressed ethylene at a constant rate for an adjustable period of up to seven days, without electronics or moving parts. This can be used in conjunction with a standard polyethylene pallet cover to condition a pallet of pears without the need for special conditioning facilities, and permits in-transit conditioning as an option. ‘Anjou’ pears grown near Hood River, OR, USA, were conditioned during the autumn and winter of 2006 and 2007 respectively, using this novel covered pallet/ERC[™] approach, for periods ranging from three to seven days. For comparison, fruit were conditioned conventionally in an ethylene room for two days, or simply warmed for five days without ethylene (winter conditioning only). Samples of fruit from each treatment were ripened fully while their aroma production and softening were monitored, and finally subjected to an informal taste comparison. ERC[™] conditioning of ‘Anjou’ pears in covered pallets proved effective for fruit in both Euro-boxes and standard cartons. Ethylene concentrations of >100 ppm were established throughout the pallet within 17 h, and could be maintained for up to seven days. Longer treatments provided fruit that were distinctly more aromatic and flavourful than those conditioned conventionally. Covering for seven days had no detrimental effects on fruit quality and marketability. In autumn, warming without ethylene failed to ripen ‘Anjou’ pears acceptably. In winter, using controlled atmosphere (CA)-stored fruit, ethylene conditioning had little effect on rate of softening, but enhanced aroma and flavour.