

### Abstract:

Winter pear cultivars are unique in requiring postharvest cold treatment to induce autocatalytic ethylene production and develop the capacity to ripen. The necessity for postharvest cold treatment may be overcome by exposure to ethylene at relatively warm temperatures. Ethylene sensitivity in pears at -1 °C is very low and thus there is little benefit to ethylene removal. Typical CA parameters for pears range from 1-3% O<sub>2</sub> and from 0-5% CO<sub>2</sub>. Oxygen levels as low as 0.5% can be tolerated by some cultivars if the exposure is brief and is followed by a gradual increase in oxygen. Tolerance to elevated CO<sub>2</sub> during cold storage depends on the CO<sub>2</sub> level, the duration of exposure, the oxygen level, and fruit condition factors, especially maturity. The most common physiological disorder of stored pears is superficial scald, which affects important storage pear cultivars including d'Anjou, Conference, and Packham's Triumph. Ethoxyquin and diphenylamine are widely used to inhibit scald development. In a USA survey, 50% of the fruit receiving ethoxyquin were treated by line spray, 43% through ethoxyquin-impregnated paper wraps, and 7% as whole-bin drenches before storage. Low oxygen (0.5%) can control scald in 'd'Anjou' pears for 3-4 months without antioxidants, but longer storage may aggravate other disorders. Pears are universally attacked by *Penicillium expansum* and *Botrytis cinerea*. The most widely used postharvest fungicide for pears is thiabendazole, even though incidence of resistance is significant in many pear-growing areas. Two biocontrol products have been registered in the USA, but have not had broad use due to inadequate efficacy. Several newer yeast selections are under development as potential biocontrol agents. The common mechanism for biocontrol among yeasts appears to be competition with the pathogen for nutrients at the wound infection site. There is increasing awareness of the importance of fruit quality in the management of postharvest decay, and of the value of integrating decay management tactics throughout the growing season and during handling and storage.