

Abstract:

Superficial scald is the main physiological disorder in pears and apples in the Neuquen and Río Negro production areas of Argentina. Legislation in several countries is becoming more severe with respect to the level of residues allowed in fruits, as consumer pressure to diminish the use of synthetic products is increasing. The objective of this investigation was to study the effect of Initial Low Oxygen Stress (ILOS) before Ultra Low Oxygen (ULO) and Low Oxygen (LO) storage on scald development and postharvest quality of 'Beurré d'Anjou' pears as an alternative to the use of diphenylamine (DPA). Subsamples were stored with and without the application of DPA under either regular atmosphere (RA) or ILOS (0.5%O₂/0.1%CO₂) conditions followed by ULO (1.0%O₂/0.1%CO₂) and LO (1.5%O₂/0.1%CO₂) storage. Incidence and severity of superficial scald, maturity and quality of the fruit were evaluated after 196 and 277 days of storage plus 1 and 7 days at ambient temperature (20° C). No scald developed following 196 days of storage in either treatment. Scald development on fruit stored under RA conditions for 277 days affected 77.5% of the fruit without DPA treatment and 48% of the DPA-treated fruit. However, ILOS + ULO and LO storage significantly inhibited the development of superficial scald, even in fruit without DPA application. Fruit stored under LO had no scald at all whereas ILOS followed by ULO had 0% and 8% with or without DPA, respectively. Fruit quality (maturity, skin color, weight loss) in fruit stored in CA was superior to that of fruit in RA storage. 'Beurré d'Anjou' pears stored in CA were firmer, greener and had more acid than those held for the same length of time in RA. These preliminary results show that 'Beurré d'Anjou' pears can be stored using ILOS + ULO or LO as an alternative to DPA.