

Abstract:

The fastest way to transport highly perishable horticultural crops over long distances is air shipment. This rapid delivery is however constrained by the fact that the optimal conditions required for fresh fruits and vegetables are hardly ever maintained onboard the aircraft. The temperature during flight can sometimes exceed 20°C and the cargo holds are usually pressurized to 0.7 atm. The objective of this study was to evaluate the impact of the low pressure usually encountered during flight on the quality of fresh strawberries. The fruit, previously equilibrated to 1°C, were stored for 8 hours at 0.7 atm, in air or in 70% N₂ + 30% O₂ (= 0.21 atm O₂) at 20°C and 98% relative humidity (RH). Strawberries stored for 8 hours at 1 atm in air at 20°C and 98% RH were used as the control. After 8 hours the fruit were transferred to 1°C for 7 days with normal pressure and 96% RH. Weight loss, visual quality, firmness, titratable acidity, and soluble solids content were evaluated after harvest, after air freight simulation, and after 3, 5, and 7 days of storage. There were no significant differences between treatments for weight loss, visual quality, firmness, titratable acidity, or soluble solids content of the fruit. No evidence of stress in strawberry fruit was observed in response to low pressure during a simulated 8-h flight. The results suggest that the low pressure usually encountered during flight does not have a negative impact on the quality of strawberries. However, the combined effects of low pressure, temperature fluctuations, and low RH still need to be investigated in order to have a better understanding of the physiological behavior of perishable horticultural crops during transport by air.