

Title Improving postharvest strawberry fruit quality with carbon dioxide and nitrous oxide at high ambient temperatures

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Abstract

Strawberries (*Fragaria × ananassa* Duch.) are one of the most perishable of fresh commodities. To investigate the effects of modified atmosphere on strawberry fruit quality and shelf life, strawberry fruits were kept in the open air or in 120 L barrels in air, 20kPa carbon dioxide or 100kPa nitrous oxide for 4, 5, 6 and 7 days at ambient temperatures (10-20°C minimum–maximum) and 88% relative humidity. Strawberry fruits kept in CO₂ and N₂O inhibited fungal growth even after fruit were removed from storage compared with controls. Fungal growth in the CO₂ treatment appeared more rapidly than in the N₂O treatment. For quality attributes, total soluble solids (TSS, mainly sugars) increased in CO₂ and N₂O treatments more than both air controls. Titratable acidity (TA) decreased in N₂O treatment more than CO₂ treatment and both of these in turn had lower acid than the control treatments. Acceptability depends upon personal taste but usually a balance between sweetness and acidity (TSS/TA), within a range not to be exceeded either way, is desirable. Treatments that increase sweetness may be useful especially for acid cultivars. Both CO₂ and N₂O increased this ratio (sweetness) and would be considered beneficial.