

Title Preliminary evaluation of storage technologies for broccoli, cauliflower and head lettuces
Authors J.H. Ekman and J.B. Golding
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Abstract

There is a potential market for Australian vegetables in distant markets if they arrive in good condition and with adequate shelf life at a competitive price. Sea freight is slower than air freight but has cost advantages and offers good temperature control. In addition, sea freight containers which provide a modified atmosphere (MA) or controlled atmosphere (CA) can potentially increase product storage life compared to air alone. However, as loads often contain two or more types of vegetables, the storage atmosphere used may need to suit multiple products. We examined how quality attributes of broccoli, cauliflower and lettuce deteriorated during storage in different atmospheres with a view to shipping these products from Australia to the United Arab Emirates, a journey of approximately 23 days. Products were stored in 11% O₂ + 10% CO₂, 2% O₂ + 2% CO₂, humidified air or commercial packaging in air. Quality attributes were evaluated after 3, 4, 5 or 6 weeks storage at 0.3°C and again following 2 days simulated shelf life at 20°C. It was estimated that broccoli could be stored for a maximum of 3 weeks in crushed ice, 4 weeks in humidified air or 5 weeks under a controlled or modified atmosphere and still retain good outturn quality and adequate shelf life. Cauliflower storage life was increased from 4 weeks to 5 weeks by storage in 2% O₂ + 2% CO₂. Lettuce did not benefit from CA and had the most variable quality of the vegetables tested. It was concluded that there are only marginal benefits of using CA or MA to ship broccoli, cauliflower and lettuce from Australia to Dubai. Air storage at 0.3°C should provide good outturn condition and adequate shelf life so long as products are handled correctly and water loss is minimised.