

Title Design of modified atmosphere packaging system for guava (cv. Baruipur)
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Citation Abstracts, 10th International Controlled & Modified Atmosphere Research Conference, 4-7 April 2009, Antalya, Turkey. 80 pages.
Keyword MAP; modified atmosphere packaging; guava

Abstract

Modified atmosphere packaging is a technique used to prolong the shelf life of fresh commodity by changing the composition of the air surrounding the food in the package. The optimum atmosphere inside the package is achieved by two processes, the respiration of the product and the permeation of gases through the packaging that leads to an atmosphere higher in CO₂ and lower in O₂. These atmospheres reduce respiration rate, ethylene sensitivity and production, decay and physiological changes. MAP is a dynamic system during which respiration and permeation occur simultaneously. Hence factors affecting both respiration and permeation were considered for designing a package. There are a total of 13 variables involved in design of MA packaging in polymeric films. The independent variables includes: weight of guava, surface area of packaging film, free volume of the package, thickness of the film and permeabilities of film to O₂ and CO₂. The fixed variables are: the surrounding gas composition and temperature, the respiration rates for O₂ consumption and CO₂ evolution, and the equilibrium gas compositions to be attained in the package so that the guava (cv. Baruipur) shelf-life is extended. The package was designed for medium size 1 kg guava ± 100 g at simulated condition of MAP storage. The MA Packages were evaluated through assessment of the quality parameters namely weight loss, fruit firmness, puncture strength, color, total soluble solids, ascorbic acid, titratable acidity and sensory evaluation etc. Guava packed in modified atmosphere lost less weight, presented better colour, and preserved better firmness than fruits stored in air with extending shelf-life.