

Title The effect of modified atmosphere packaging (MAP) on some physiochemical characteristics and texture of Iranian apple 'Shafi'

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Citation Abstracts of 27th International Horticultural Congress & Exhibition (IHC 2006), August 13-19, 2006, COEX (Convention & Exhibition), Seoul, Korea. 494 pages.

Keywords modified atmosphere packaging; MAP; quality; Shafi Abadi apple; storability

Abstract

Ethylene as a plant hormone plays a major role in senescence and loss of fruit quality and shelf life of apples and makes the fruits unacceptable for consumption. Modified atmosphere packaging is the way that controls respiration rate of product through decrease in O₂ and increase in CO₂ levels. In order maintain quality and increase in storage life of 'Shafi Abadi' apple an experiment was conducted in split factorial design with four replications. Treatments were three different storage temperatures (1, 4 and 25 °C); gas combinations with two levels (2% CO₂ – 3% O₂ and 4% CO₂ – 1% O₂) and two types of polymeric films (polyethylene and polypropylene). The tissue firmness, TSS, EC, pH, TA, TSS/TA, humidity percentage and rate of ethylene production were measured and estimated every 14 days. The results showed that ethylene production rate at 1°C was lower and the packed fruits under 1°C with gas combination of 1% O₂ – 4% CO₂ and polypropylene film maintained TSS, TA, TSS/TA and tissue firmness values compared to other treatments. PH and TSS/TA of fruits showed an increased trend and TSS, TA decreased as well through the storage of fruits. The changes of quality factors occurred with slower rate than controls. The results indicated that modified atmosphere packaging has led to extension of storability and retardation of softening rate in fruits compared to controls.