Title Study of programmed hypobaric storage of 'Cuiguan' pears

Authors W.X. Chen, H.Y. Gao, Y.J. Zhou, H.J. Chen, J.L. Mao, L.L. Song, F. Tao, L.M. Ge, Y.H. Zheng

Citation ISHS Acta Horticulturae 804:645-650. 2008.

Keywords programmed hypobaric storage; ethylene production; respiration rates; soluble solids concentrations; titratable acidity and vitamin C concentrations

Abstract

'Cuiguan' is the most important pear cultivar grown in the Zhejiang province of China because of its unique eating quality that is often considered superior to other pear cultivars and it is highly favoured by consumers. Unfortunately, 'Cuiguan' pears are harvested during the hot rainy season and are liable to spoil. The fruit rapidly lose their market value and storage life is limited to about 2~3 weeks in common cold storage. Hypobaric storage has been shown to significantly inhibit postharvest ripening and senescence, thus extending shelf life in various fruits and vegetables. However, there are no published data on the effects of hypobaric storage on 'Cuiguan' pears. Although it has many virtues, hypobaric storage has some defects and problems. To overcome these defects we presented the idea of programmed hypobaric storage. Programmed hypobaric storage means that fruit were stored at different vacuum pressures in different phases that were automatically controlled according to a predetermined program. The effects of programmed hypobaric storage on the physiological and biological characteristics of 'Cuiguan' pears were compared to cold storage in air. The vacuum pressure was controlled from 5 to 100 kPa. Changes in fruit decay rate, quality parameters, and respiration and ethylene production rates were monitored during storage. Programmed hypobaric storage significantly ($P \leq 0.05$) slowed the rates of respiration and ethylene production, inhibited softening, and slowed the rate of loss of vitamin C and soluble solids. Programmed hypobaric storage maintained storage life for up to 60 days.